



VENETI

GAULS

Este

Adria

Spina

LIGURI

Felsina

0 100 200  
Kilometres

Monaco  
(Monoikos)

Felathri Arezzo

Curtun

Clevsin

UMBRI

Fufuna

Vetluna

Rusellae

PERUSNA

Velzna

PICENI

Veich

Tarchna

Veii

Caisra

Ruma

Etruscan Area of Influence

SANNITI

DAUNI

Capeva

IAPIGI

PEUCEZI

MESSAPI

Cuma

Napoli

Marcina

Taranto

Posidonia

Metaponto

Velia

Sibari

Tharros

Olbia

Greek Area of Influence

Crotona

I. Eolie

Lipari

Phoenician Area of Influence

Cartagine

Palermo

Messina

Reggio

Mozia

Selinunte

Agrigento

Gela

Siracusa

● Etruscan League  
● Other Etruscan

Malta

**Coastal Plain –South of River Tiber –**

**Latinum – Latins – shepherds,farmers**

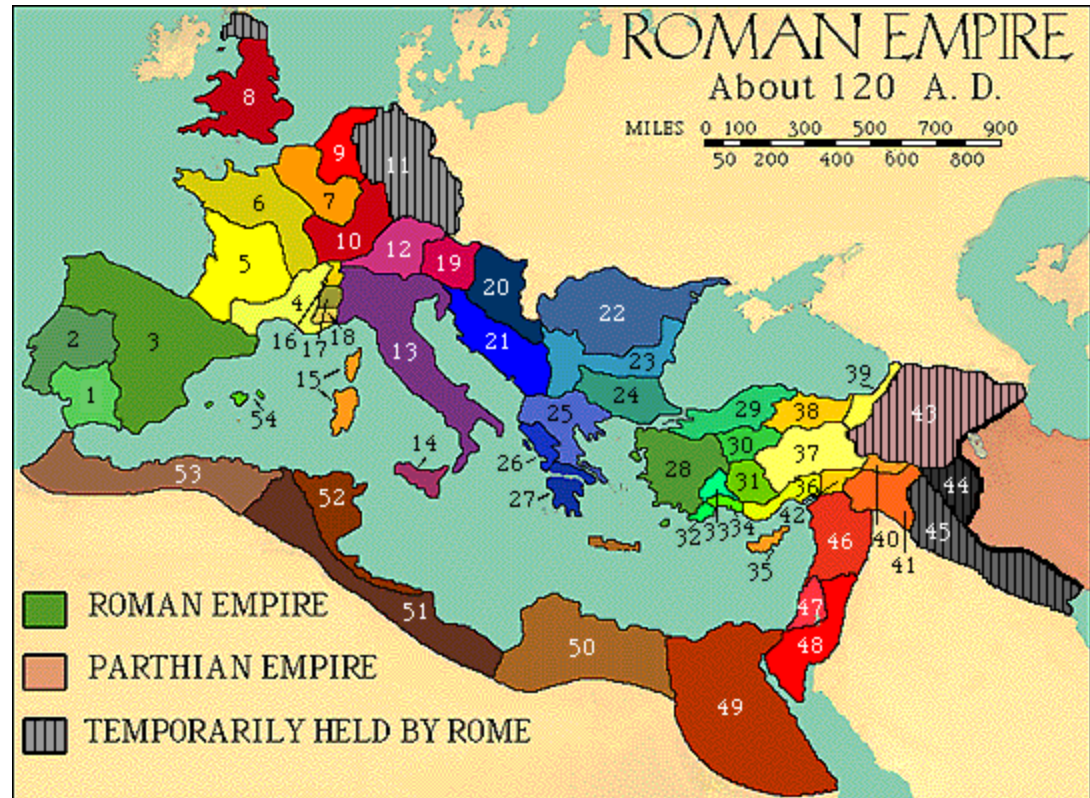
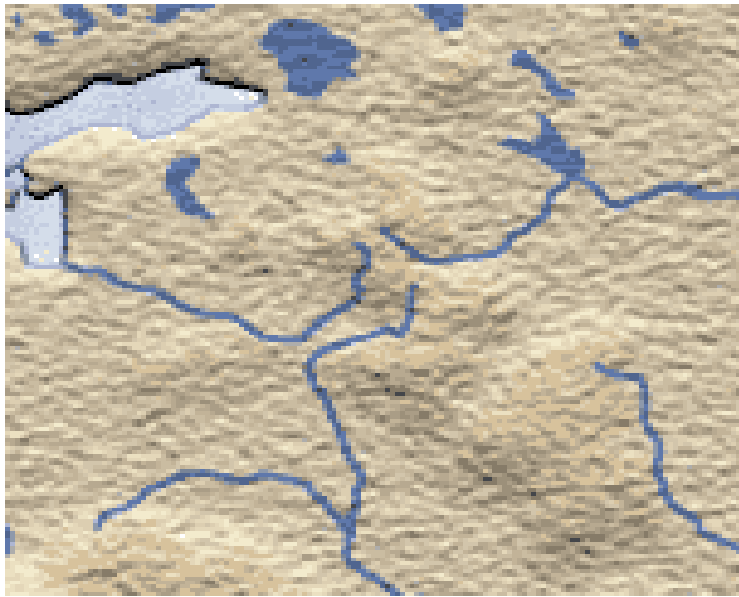
**Sabines – west of the hills**

**(Palitines, Capitoline, Esquiline, Latins, Sabines, Romans)**

**Rome – Towns on the seven hills joined together**

**Common citizens – Plebeians**

**Patricians – wealthy, aristocratic citizens**





**Romans – Proud, Prompt, Practical**

**Veni, Vedi, Vici**

**Great organisers, dutiful to authority, law,  
Patriarcal**

**Extended power – conquest**

**Julius Caesar – empire – compact, cosmopolitan,  
universal justice, equality of rights**

**Technicians, Engineers- road, water, drainage**

**Augustian Age** – Early Empire –Julius-  
Claudius Dynasty –Augustus -Emperor  
Emperor Augustus, Caligula, Nero,

**Golden Age** – Hadrian,  
Marcus Aurelius

**Flavian Dynasty** –Vespasin, Titus,

**Antonine Age** –  
Trajan, Septimus Severus, Caracalla

**Constantine the Great** –Western –Eastern  
Empire- -Rome, Constantinople,  
Christianity

## **Geological –**

**Tufa –stone –various hardness**

**Travertine – hard limestone –fine quality – Tivoli**

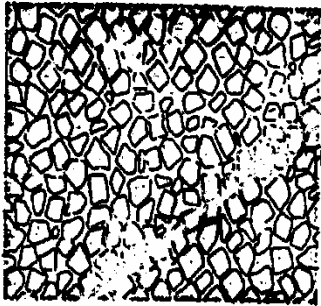
**Lava, gravel, excellent sand**

**Pozzolona – volcanic earth – mixed –lime,water –  
mortar – great strength, tenacity –**

**CONCRETE-** alt layer –rubble and mortar –

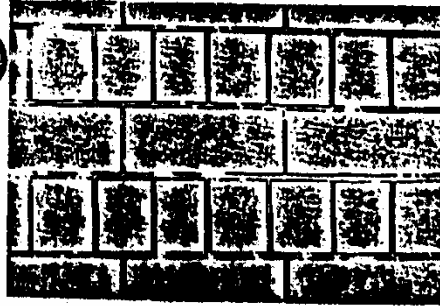
**New kind of freedom – curves, niches**

# Composite walls – decorative sheathing – Marble, Stucco,—(marble dust plaster) Mosaic.

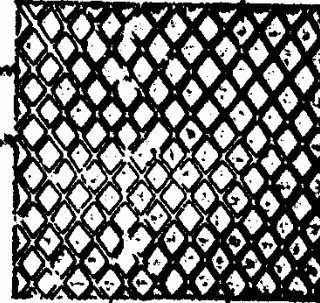


*opus incertum*  
small stones, roughly polygonal

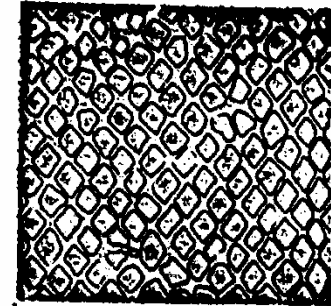
(4)  
(5)



*opus quadratum*



*opus reticulatum*



*opus testaceum*

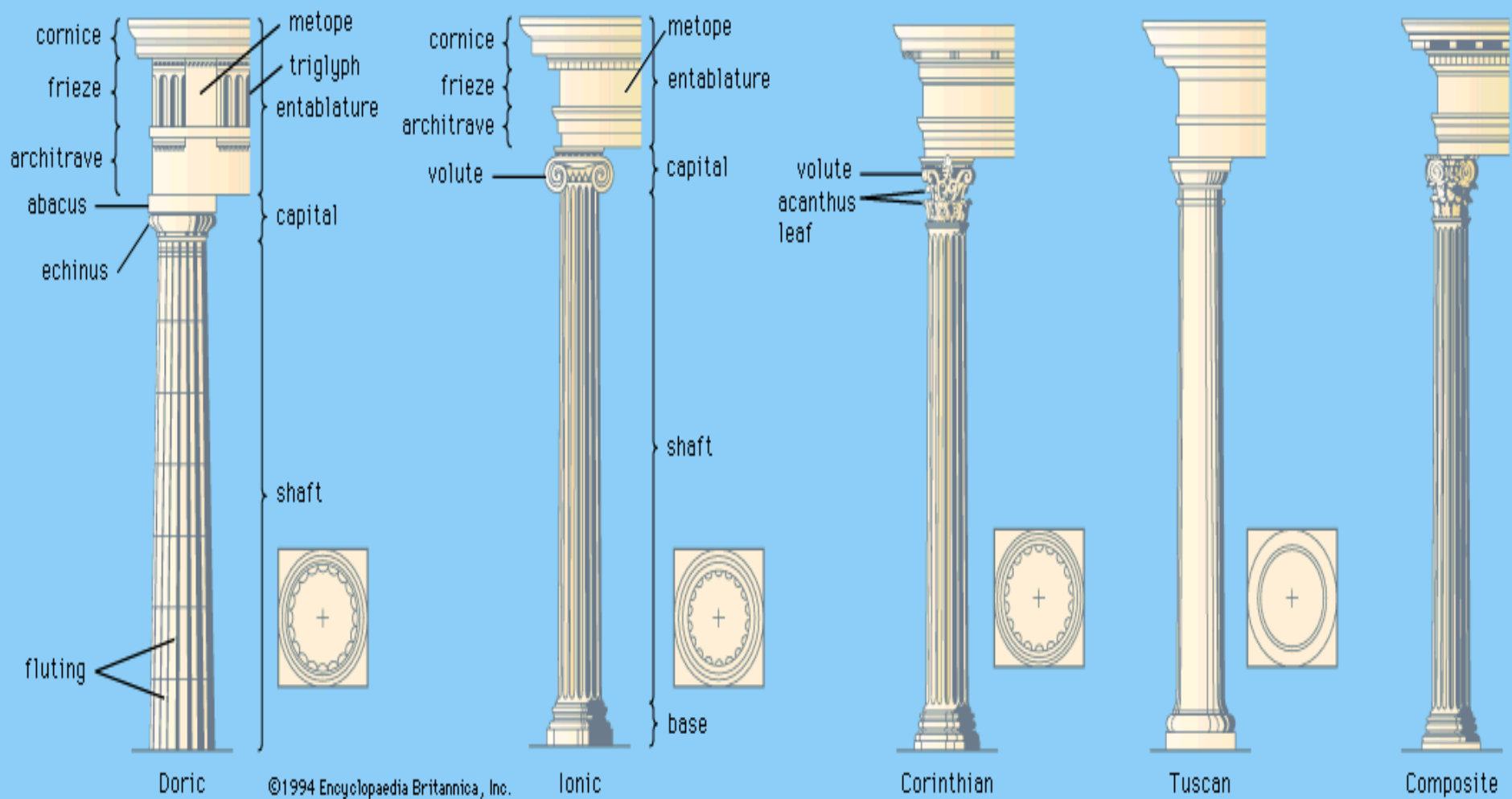
**Opus Incertum-**  
small stones-roughly polygonal

**Opus Quadratum-**  
Rectangular – 4'x2'x2'  
Dowels, cramps

**Opus Reticulatum**  
Fine joints,  
Lozenge – 4''  
sq.- 8-10''

**Opus Testaceum**  
Brick facing





**Tuscan- 7 times –Ht- unfluted, - with base, Plain entablature replaced – garlanded bulls skulls, less massive, less refined.**

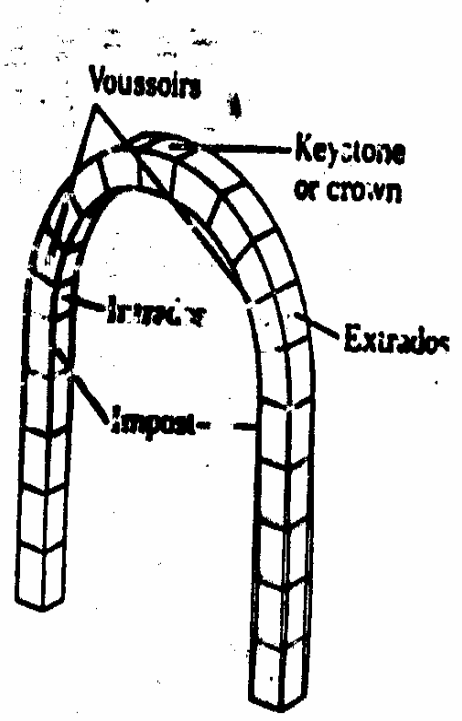
**Ionic – Volutes on all sides**

**Composite – mixture of Ionic, Corinthian –capital – volutes – large – echinus moulding –egg&dart, lower-bead & reel – employed in Triumphal Arches**

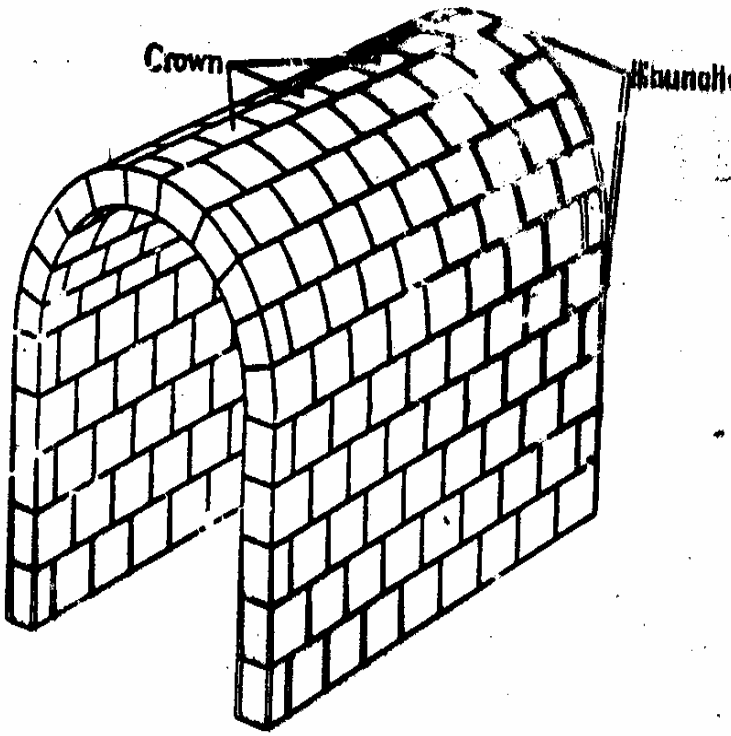
**ARCUATED CONSTRUCTION** – Bldg by the structural use of arches. Arches led – **Vaults, domes.**

Romans adapted to suit complex bldg.

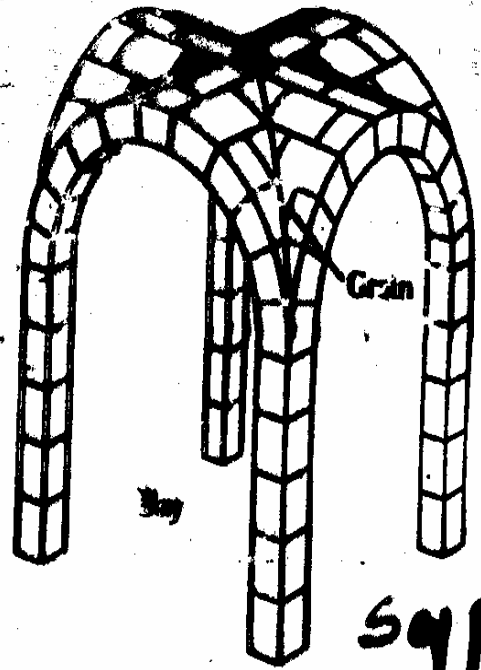
**CAPACITY TO SPAN ENORMOUS SPACES**



ARCH



BARREL VAULT



GROIN VAULT

*Sq plan*

**Arch** – span greater areas without support

Easier to erect – smaller ,lighter pieces of stone

**Principal of Arch** – each stone is supported by leaning on the key stone in the centre.

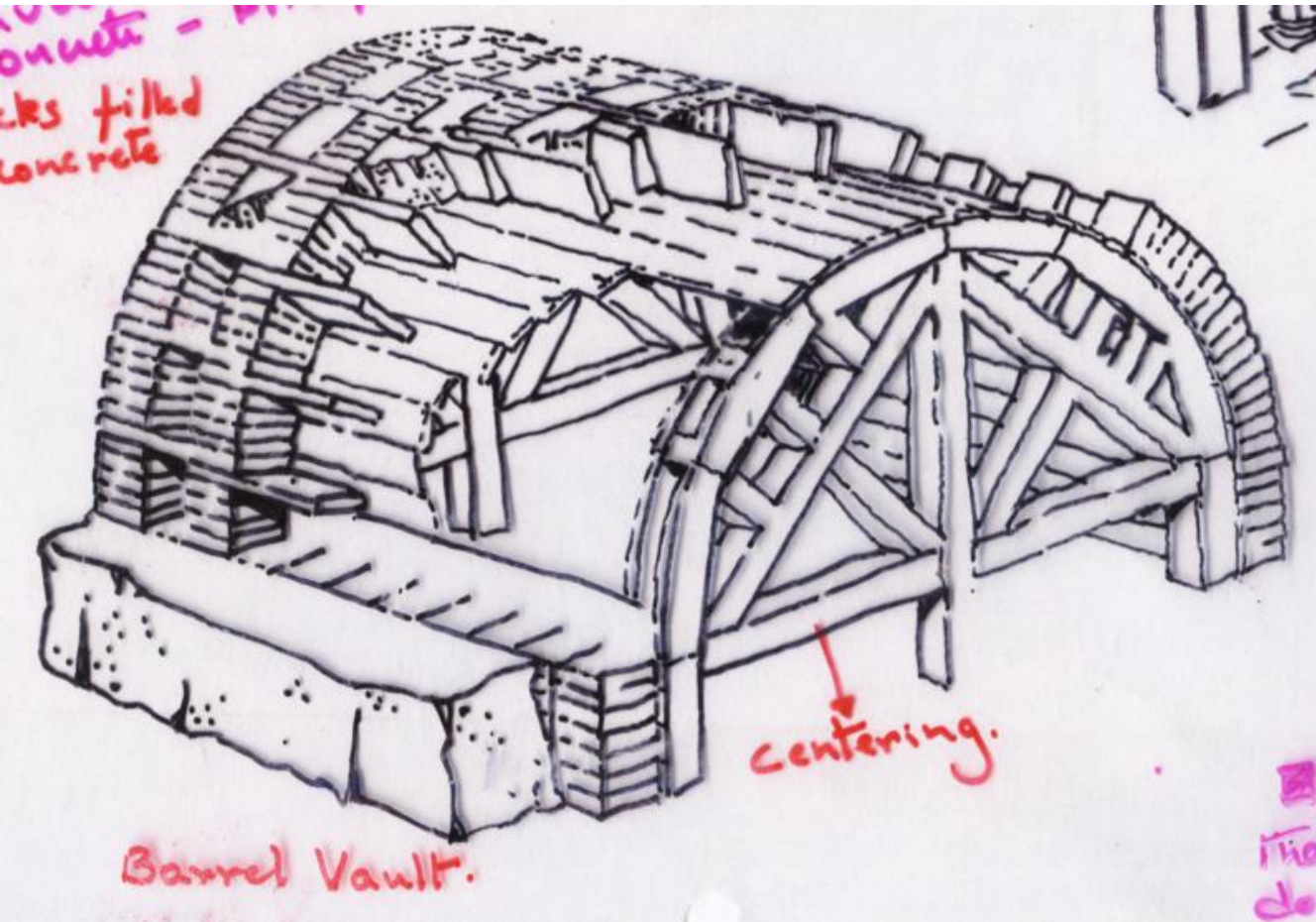
**Keystone** locks other stones in place

Arch supported – temporary scaffolding –

**Centering**

A series of Arches that form a continuous covering - **VAULT**

# VAULTING – AN ARCHED ROOFING MADE OF STONE OR BRICKS Roofs - Barrel ,Groined or Domical.



Arch led to the development of Vault.

The vault is simply a series of arches that form a continuous covering

Wooden centring (scaffolding) along its whole length

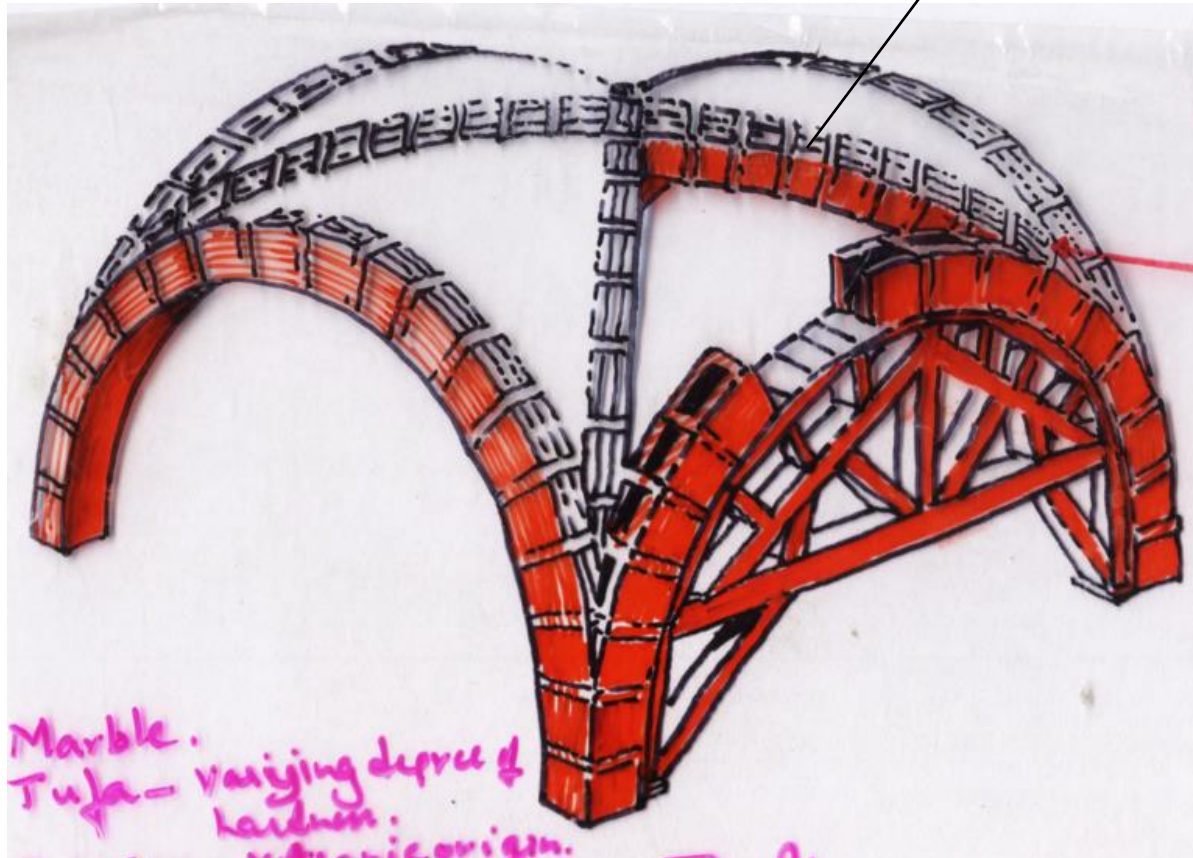
Eg – 60'wide, 120' l.

**Barrel or Tunnel vault – semicircular in section – supported on thick side walls. Span is restricted**

# Groined or Barrel intersecting Vault –

Square base- diagonal ribs

Lines of intersection –  
GROINS –bricks,stones



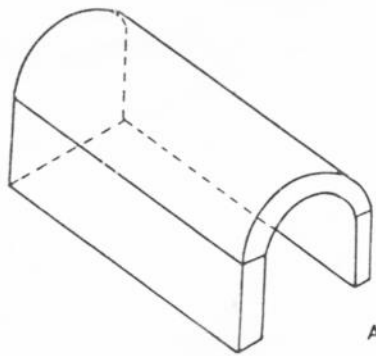
**CROSS VAULT**

**Square  
compartment-  
intersection of  
TWO semi-  
circular vaults-**

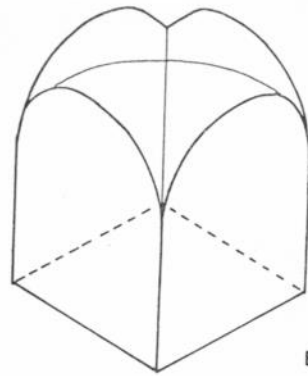
**Equal in span**

**Large span –  
bays-piers**

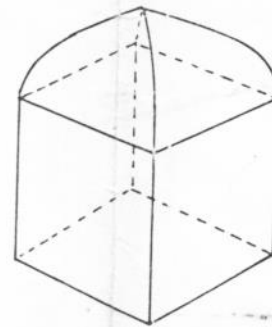
**Filled with  
concrete**



A



B

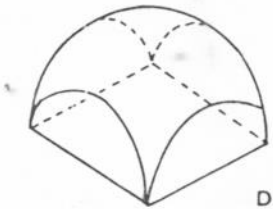


C

**Barrel Vault**

**Cross vault**

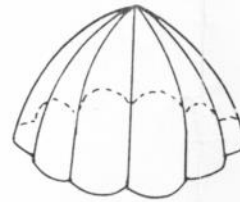
**Pavilion or Cloister vault**



D



E



F

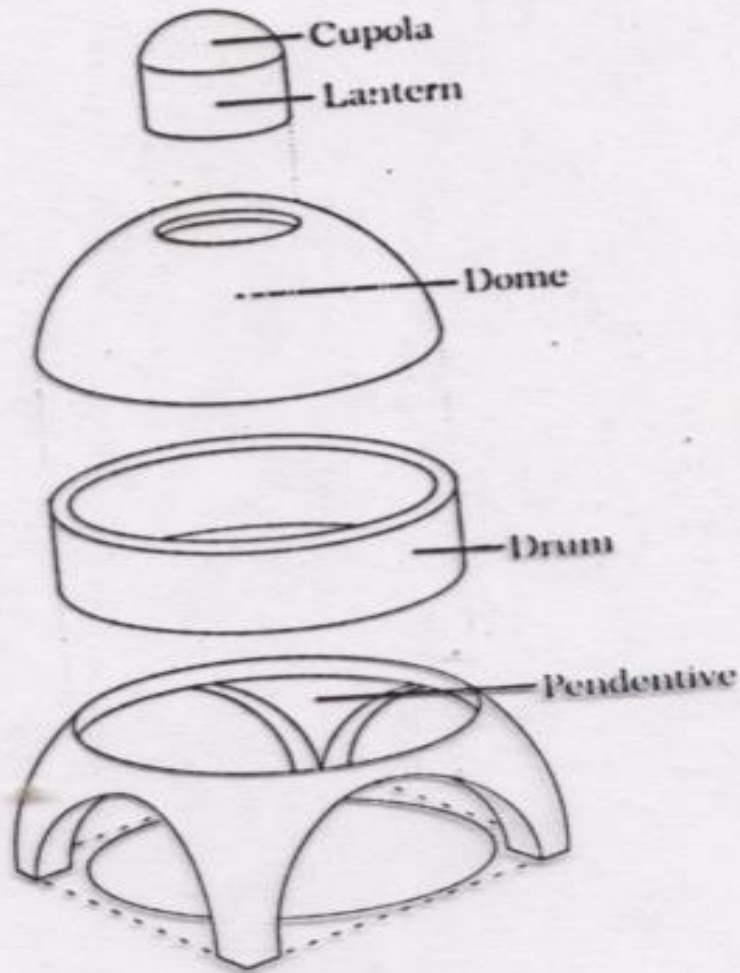
41 Roman vaults and

appear in the

**Sail Vault**

**Domical vault**

**Umbrella vault**



269. Parts of a dome

**DOME** –is a vault of segmental or semicircular section erected upon a circular base.

Give a feeling of Power

**Hemispherical domes** or **CUPOLOS** ( cupa – cup)

Concrete vaults – lightened –recessed coffers - underside

# Religious

Temples – Rectangular, -Etruscan + Greek – podium,  
portico, shorter in proportion – faced Forums- any orientation

circular – **Rotunda**

# Commercial – Forum- (Agora)

**Basilicas** – Halls of Justice, business

Triumphal Arches, pillars of Victory, gateways

**Entertainment** – Thermae, Theatres, Amphitheatres,  
circuses

**Residential** – Palaces, Domus, Insulae

Aqueducts, bridges - **Tombs, Mausoleum**





**Temple of Vesta, Rome –  
Vestal Virgins- sacred fire**

**10' high Podium, circular  
cella – 30ft in dia, -  
surrounded by 18  
Corinthian columns.**

# The PANTHEON, Rome (**pantheon – to all Gods**)

**1<sup>st</sup> Period -Dedicated to Agrippa – 25B.C.( destroyed –  
fire – A.D.80 -1100**

**2<sup>nd</sup> Period - Hadrian – AD118-128**



**First Temple to  
combine –  
concrete const.  
with Greek  
classical orders**

**Largest  
unreinforced  
solid  
concrete  
dome in the  
world**

Niches – colossal statue – Agrippa, Augustus

2 monolithic marble columns in antis

Circular foundation – 14'9" depth

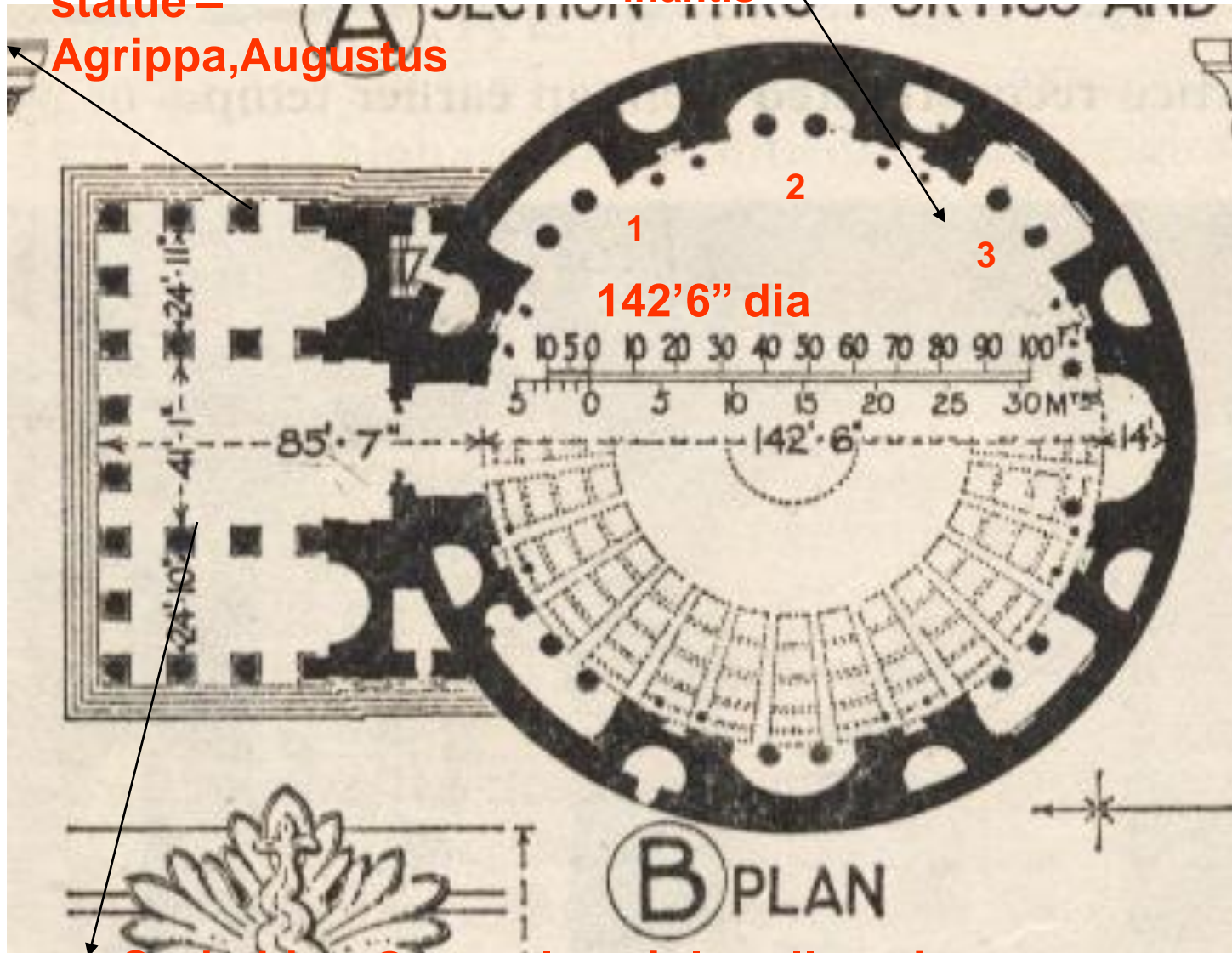
20' thick wall

8 Great recesses-

3- semicircular

4- rectangular exedraes-

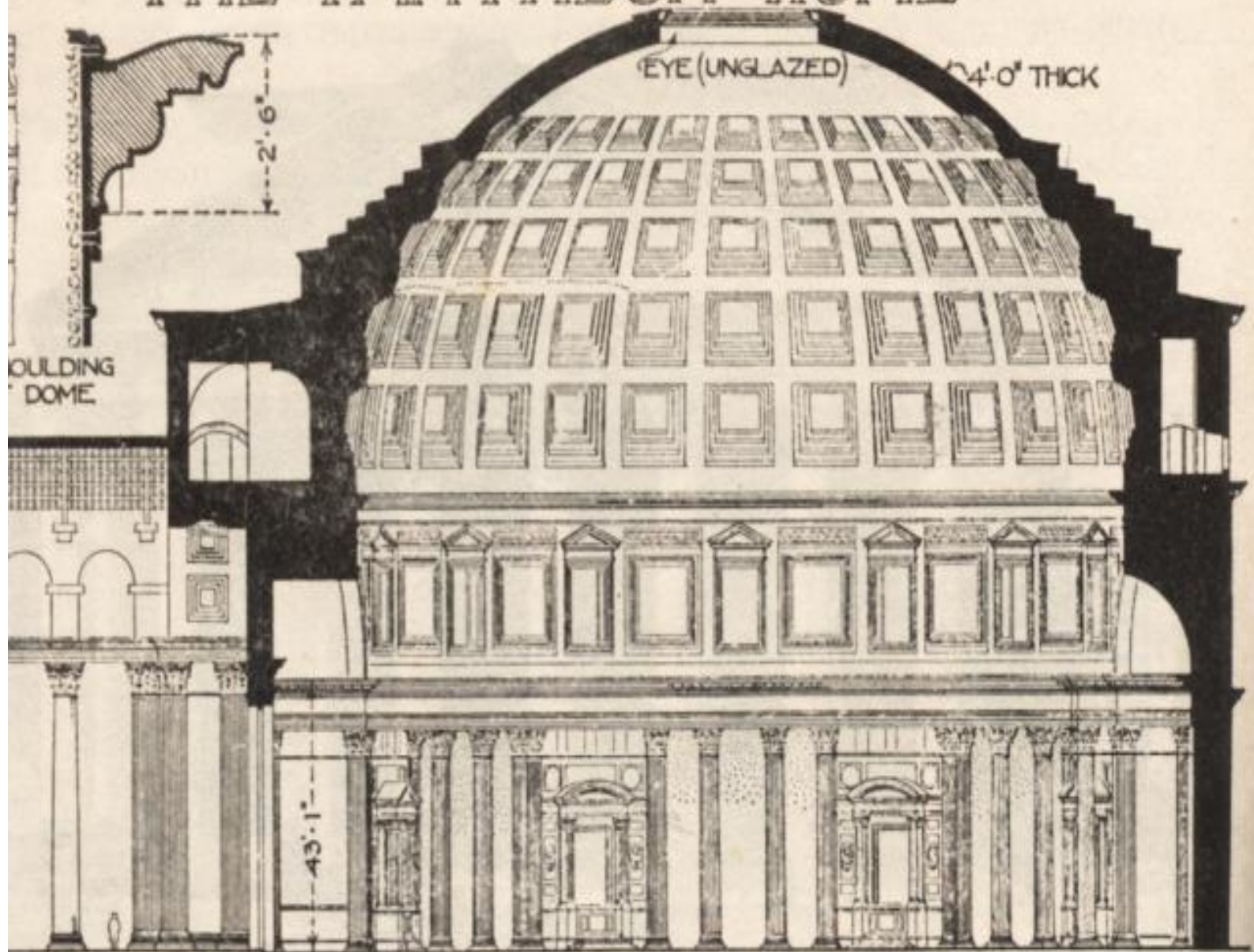
7 planets



Corinthian, Octastyle, triple colonnade

Portico – 110' x 60' Deep

# THE PANTHEON - ROME



OUTSIDE OF THE WALL

2'-6"

HOULDING  
DOME

EYE (UNGLAZED)

4'-0" THICK

43'-1"

(A) SECTION THRO' PORTICO AND ROTUNDA



**Corinthian  
Octastyle, Portico-triple  
collonade**

**110'0" x 60'deep**

**Columns – Unfluted,  
monolithic- Egyptian  
Granite**

**Capitals – Corinthian –  
white Pentilic marble-**

**4'3.5" at the top**



## **Triple collonade-**

**46'5" high,  
4'11.5" dia  
base, - 4'3" at  
top**



**Entablature – 11'0" High**

**Pediment –originally  
bronze relief**

**Agrippas Original  
Inscription**



**Ancient Bronze  
Doors – Gold  
Plated-( gold  
plate removed  
for St.Peters)**





**8 recesses –**

- 1. Entrance Door**
- 2. 3 nos - Semicircular**
- 3. 4Nos. - Rectangular exedraes**
- 4. Probavbly contained statues of seven Planets**
- 5. Two monlithic corinthian marble columns –inantis -34'10"High**
- 6. Lower third – reeded,**
- 7. Upper portion fluted**
- 8. Supporting an entablature**

Interior view -- walls 2 tiers, springs from



[www.GreatBuildings.com](http://www.GreatBuildings.com)



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**Occulus – 27'0" in dia – unglazed –only source of light**

**Dome –perfect circle-radius=height,springs from second storey from the inside but outside 3 floors.**



**Coffered – 5  
ranges –reduce  
weight,  
decorative,  
foreshortened**

**Tufa & brick  
alternate layers-  
lower part**

**Tufa & pumice –  
lighter above**

**Amphitheatres-** characteristically Roman-

**Display = mortal combats,**

**training for warriors-**

**Gladiatorial,**

**naval combats**

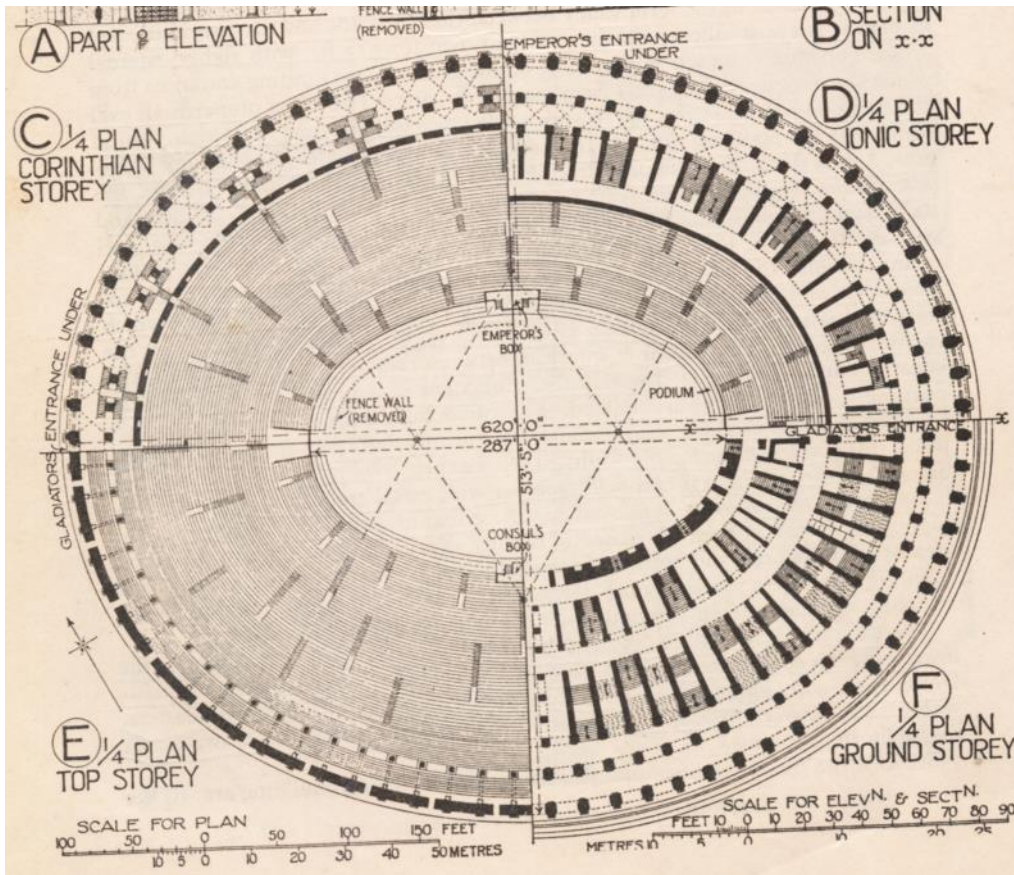
**Compound of two theatres - stage to stage –**

**making continuous auditorium round a**

**Central Arena**

**Arena – latin – sand or beach – strewn on- to absorb -  
blood**

# The COLOSSEUM, Rome- Emperor Vespasin – 72A.D. Completed – Son Titus -12 years



**Plan – Elipse -188m long  
156m –width, 57m ht.**

**Arena – oval – 87.47  
x54.86(287'x180')**

**Surrounded – 15'high wall**

**Podium – emperor, Vestal  
Virgins, Senators,**

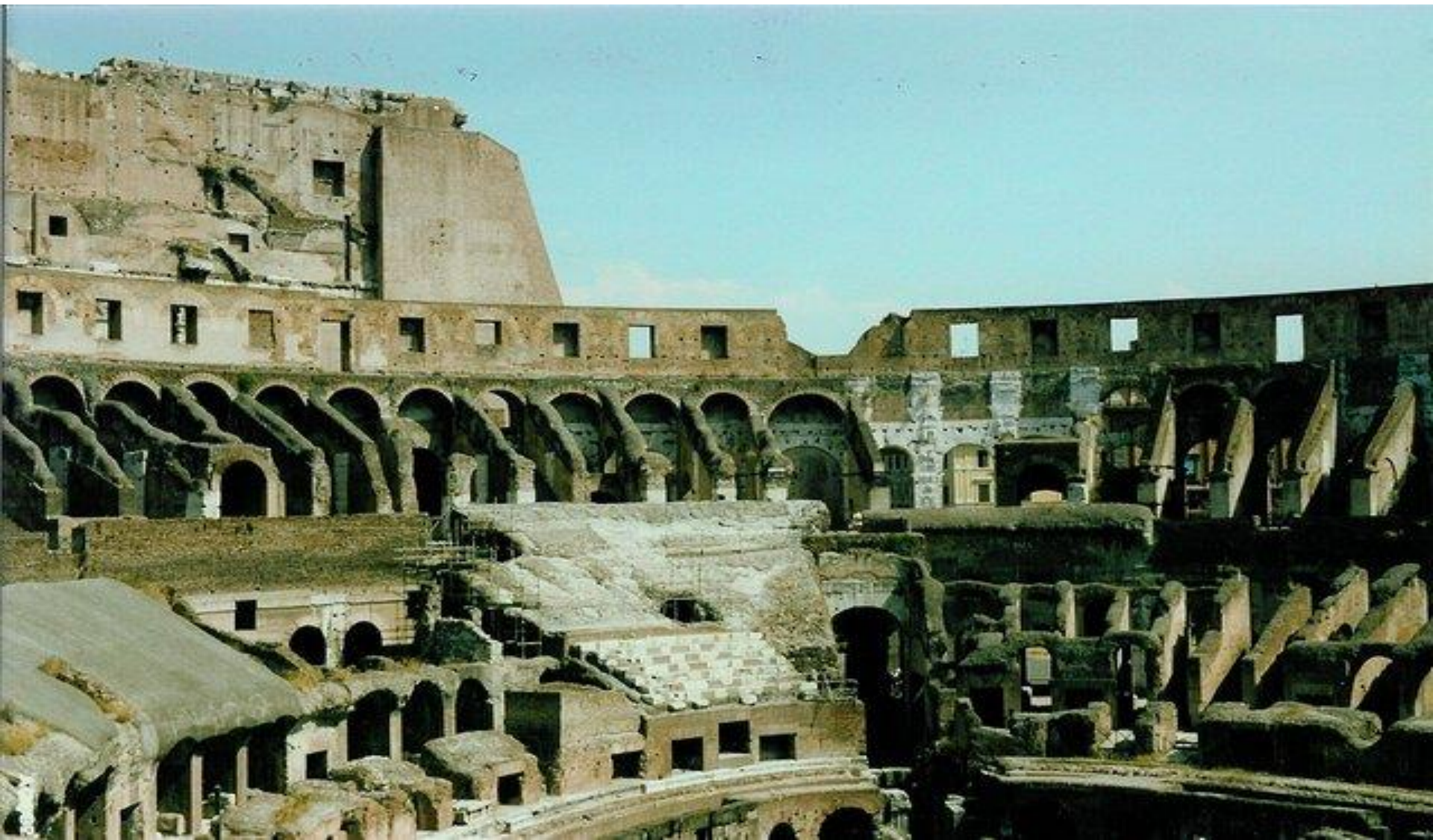
**Behind - auditorium**

**Capacity – 50,000-87,000**

## External Façade – 157'6" high, 4 storeys

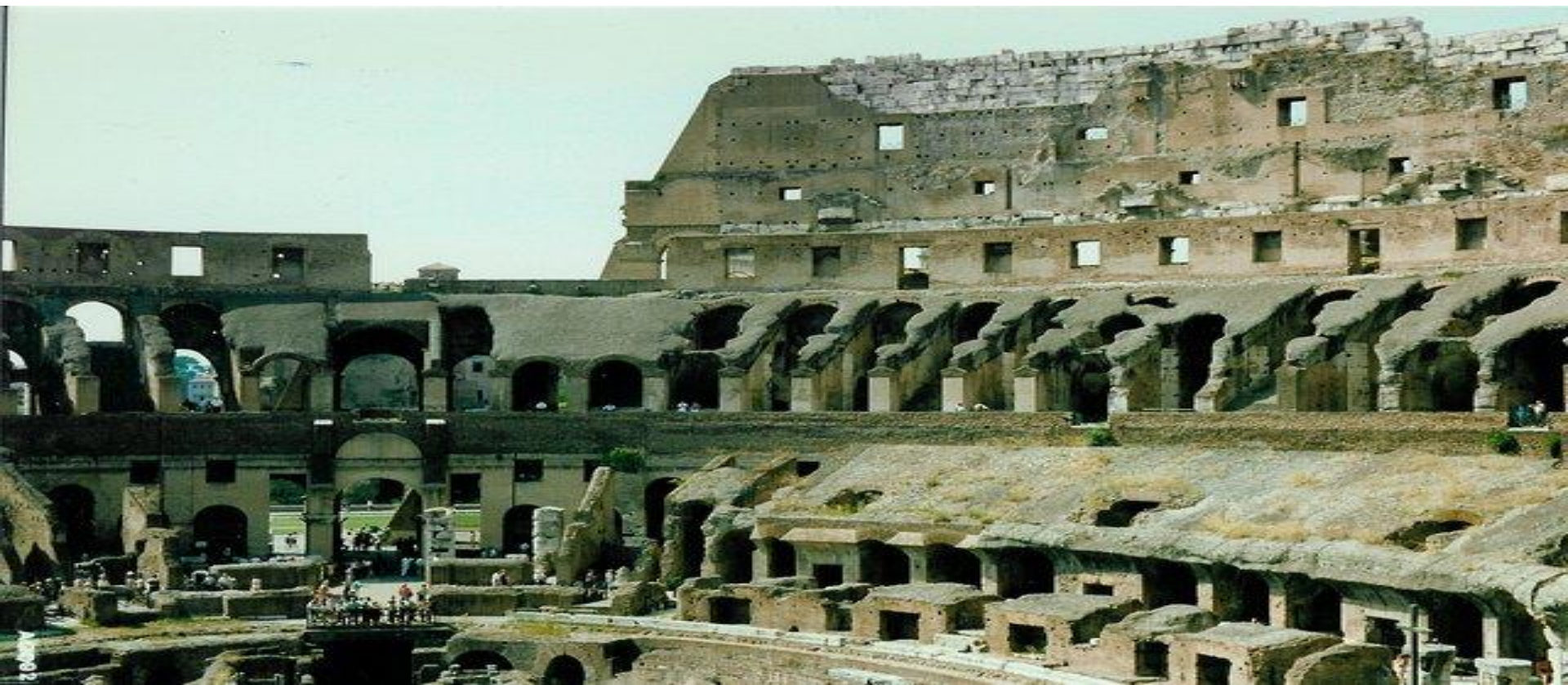


**Auditorium – Four main divisions –two lower – Equestrians  
Citizens - stairs, from corridors,**



**Foundations – lava**  
**Walls – Tufa & brick**  
**Vaults - Pumice**

**Façade – Travertine**  
**Columns, seats - Marble**





**Corbels -  
masts**

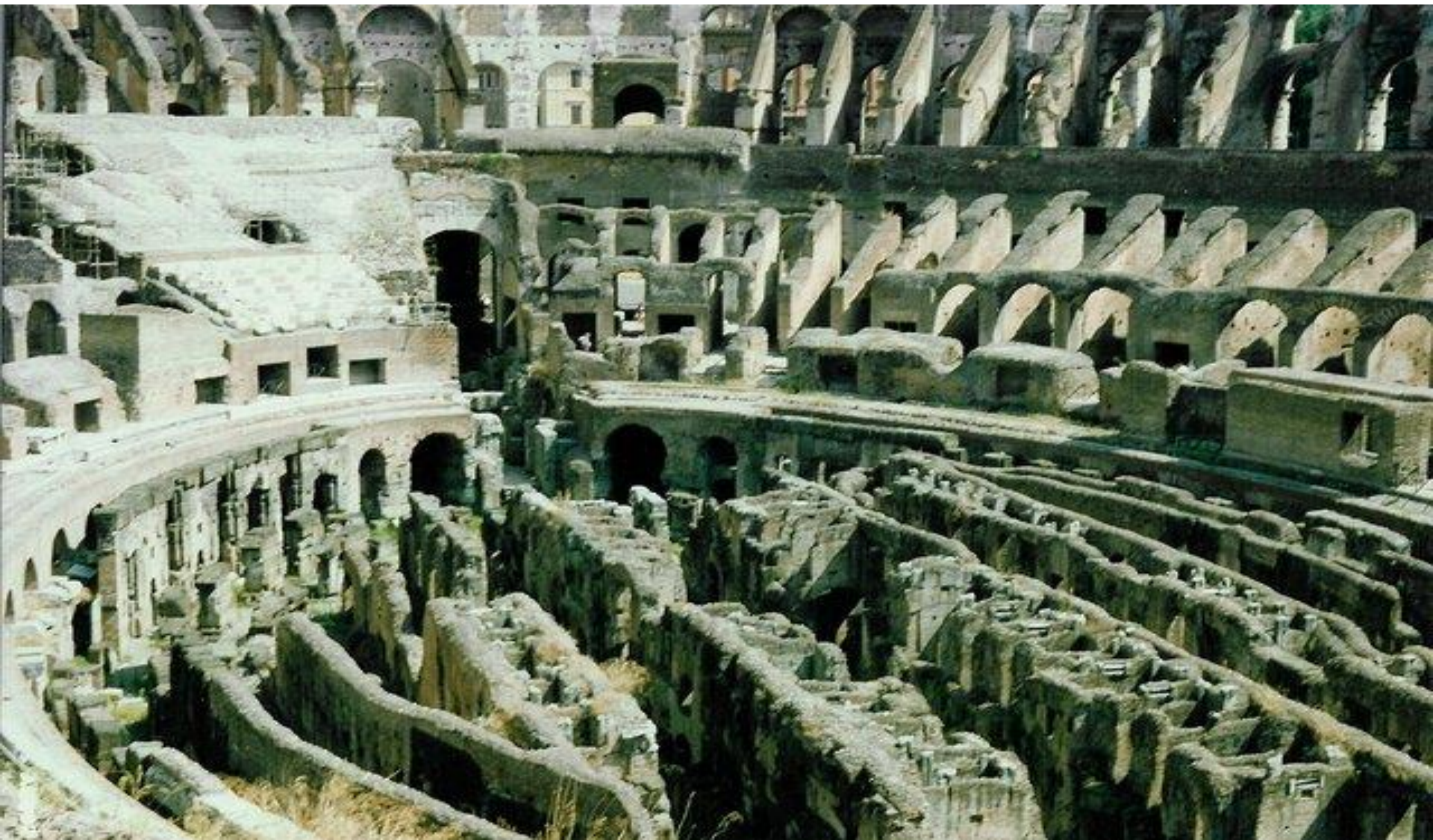


**Lower Arches -3/4s  
columns – Doric, Ionic,  
Corinthian Orders**

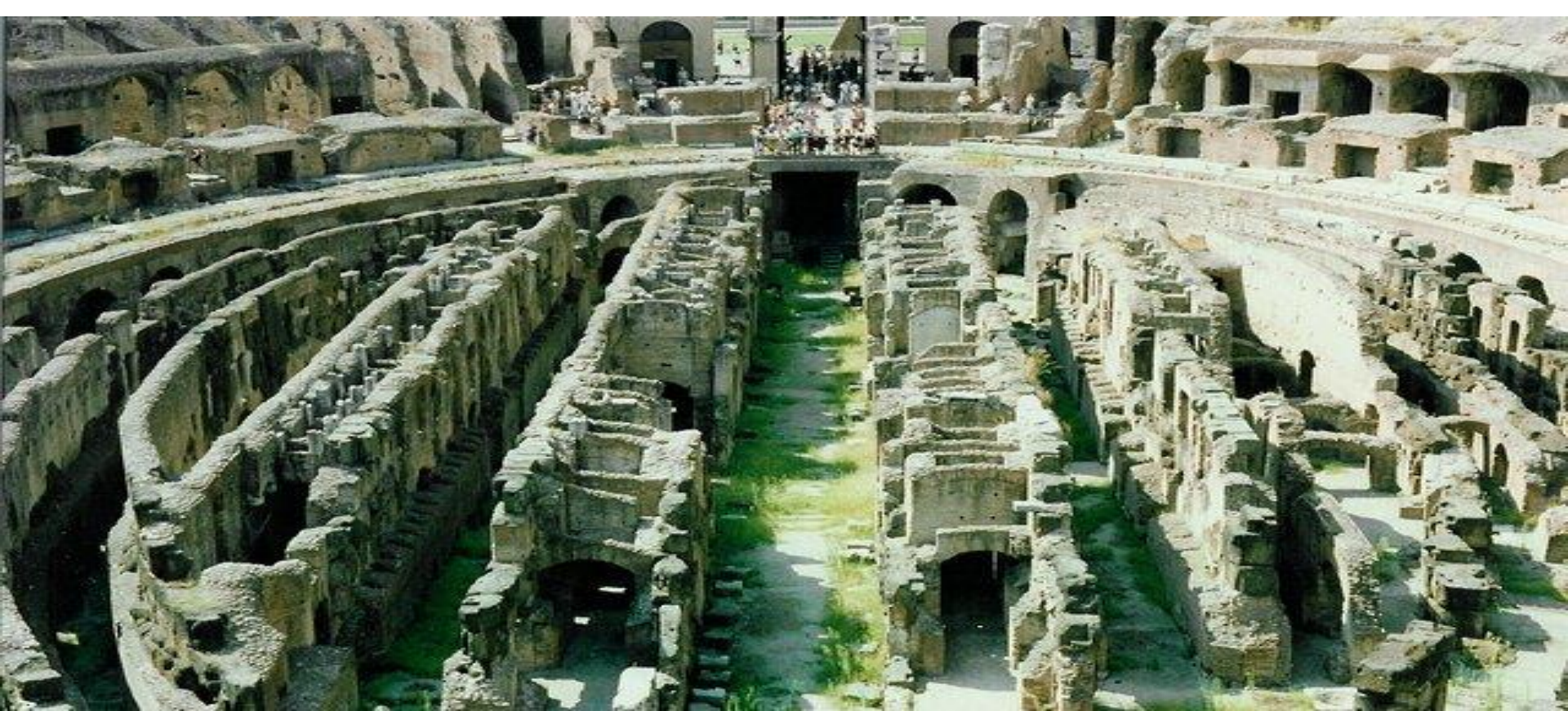
**Top storey – Corinthian  
Pilasters,**

**Corbels – support -  
mast**

**Beneath –corridor, stairs – dens – animals –level with arena**



**Unique structure – stupendous size, concrete,  
structural engg. – vaults,arches,unbroken entablature,  
use of materials,  
superimposition of classical orders**



- **TRIUMPHAL ARCHES – as a monument to celebrate military victory.**
- **Classical order – superficial framework of ornament – corinthian or composite column**
- **deeply soffited archway-**
- **supporting –entablature-**
- **Appropriate Bas reliefs – attic storey – dedicatory inscriptions, - gilt bronze statues**
  
- **single or triple arch type – two - footways**
- **situated – entrance to a forum**

**Titus, Rome, A.D.82 –  
single  
passage- attached columns-  
composite columns**



**Arch of Septimius Severus, Rome A.D. 203 –white marble, piers, Detached composite columns- richly coffered semicircular vault**



**Arch of Constantine- 313A.D.- celebrate defeat of Maxentius- fine proportion – 8 monolithic detached corinthian columns**



**Supporting-entablature-frieze – his campaigns**



**Medallions represent**

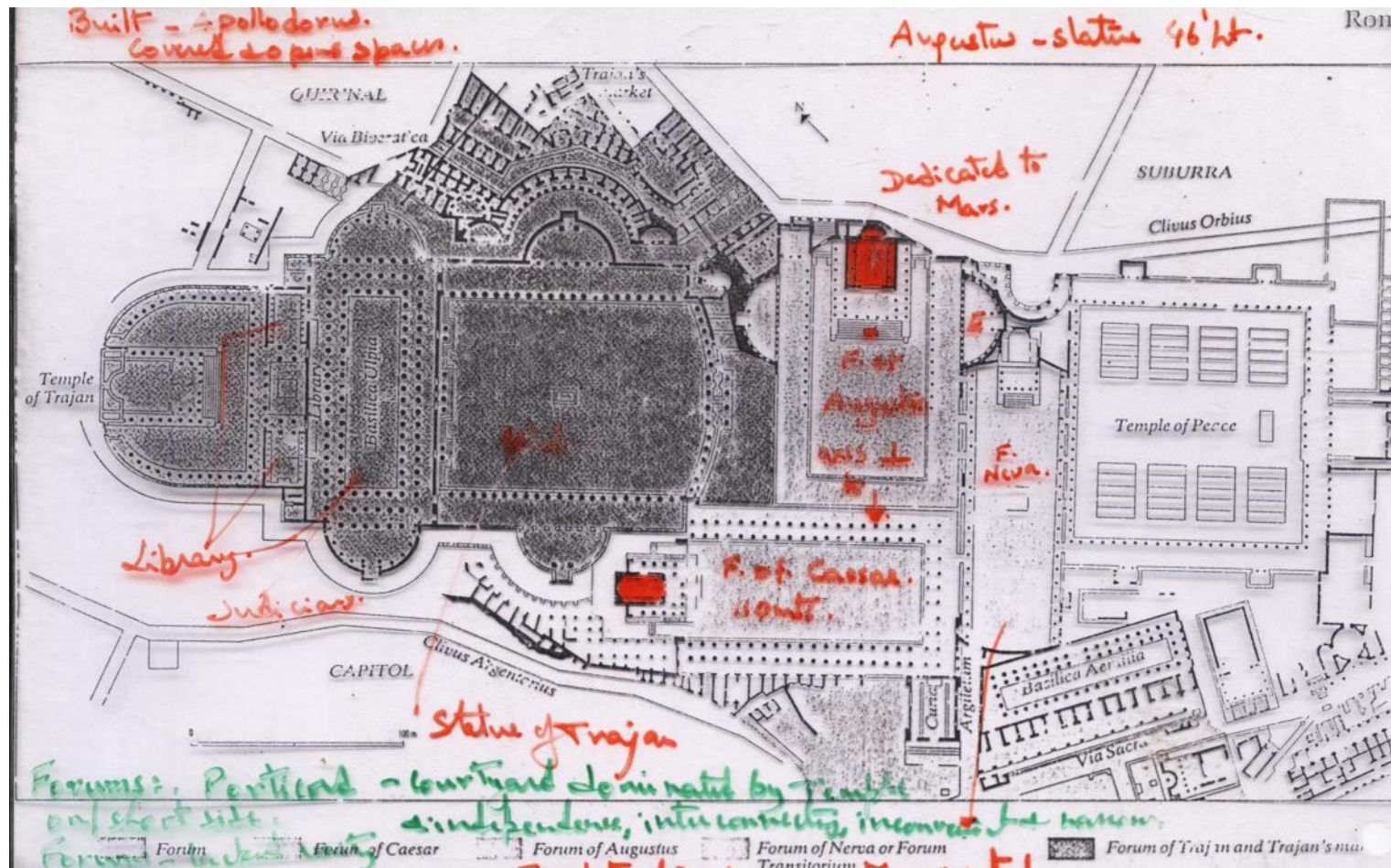
–

**Constantine  
addressing the senate  
– from the forum**



Forums – (Agora) central open space –  
 business, judicial, market, civic meetings religious.

Forum Trajan – large forum – hemicycles-eitherside-  
 marketing area, libraries, temples





Trajana Market







**THERMAES- palatial Public Baths- gym, atheletic sports, news, social meetings\_**

**Large open space, outer apartments.**

**High Platform-**

**Main Bldg – Central Hall- rooms – symmetrical**

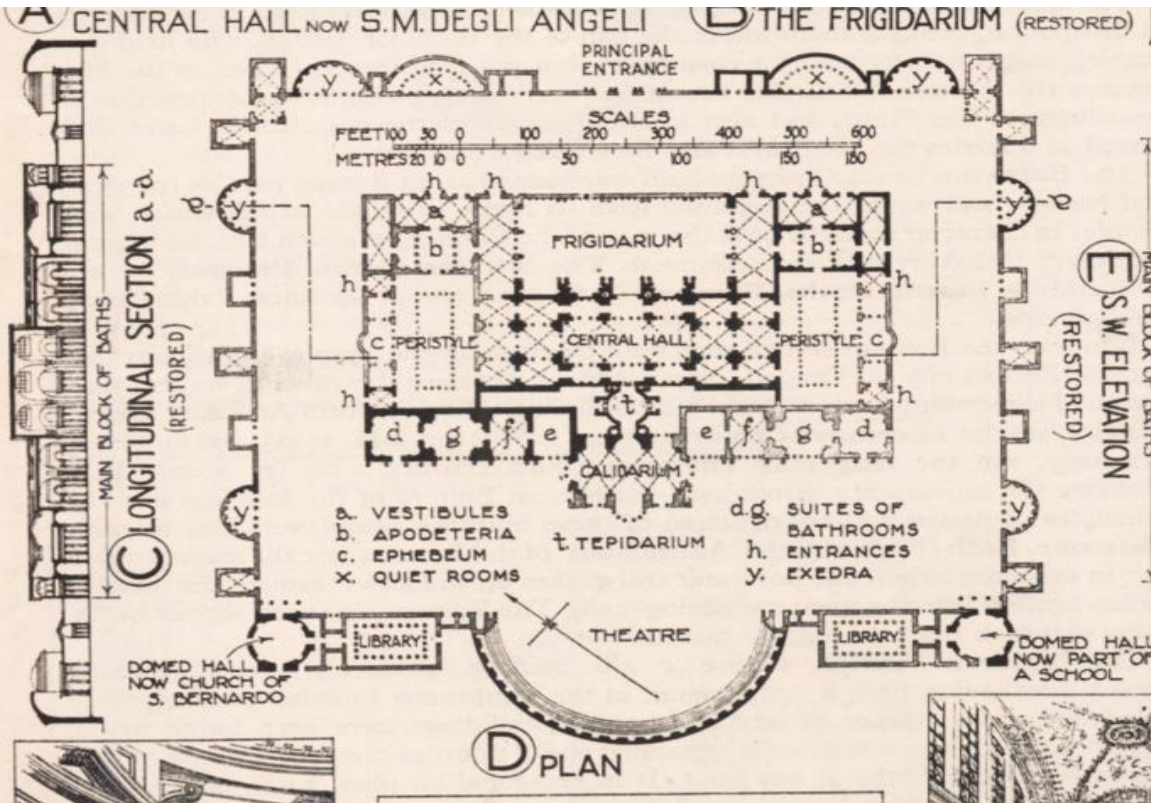
**Tepidarium – warm room**

**Calidarium – Hot room**

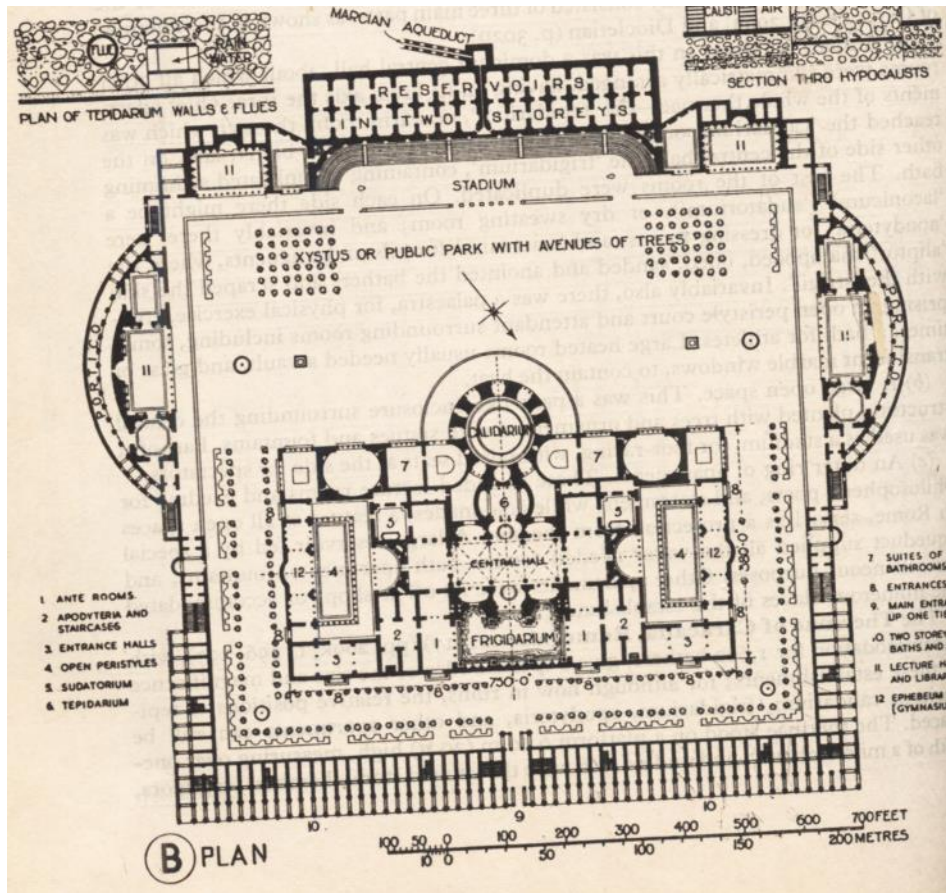
**Frigidarium –cold**

**Swimming pool**

**Sudatorium – steam bath**



# Thermae of Caracalla, Rome -1600 bathers



Main bldg block

750'x 380' -285,000sft

Central Hall –  
183'x79'x108' high



## **Pillars of Victory-**

**Trajan's Column -106-113A.D.**

**Roman Doric Column-  
marble- 115'7" height**

**12'2" dia shaft- contains  
spiral staircase.**

**Pedestal –Tomb**

**sculptered trophies**

**Narrative – 2500 human  
figures – 800' long- 3'10"  
wide**

**Surmounted – statue –  
St.Peter**

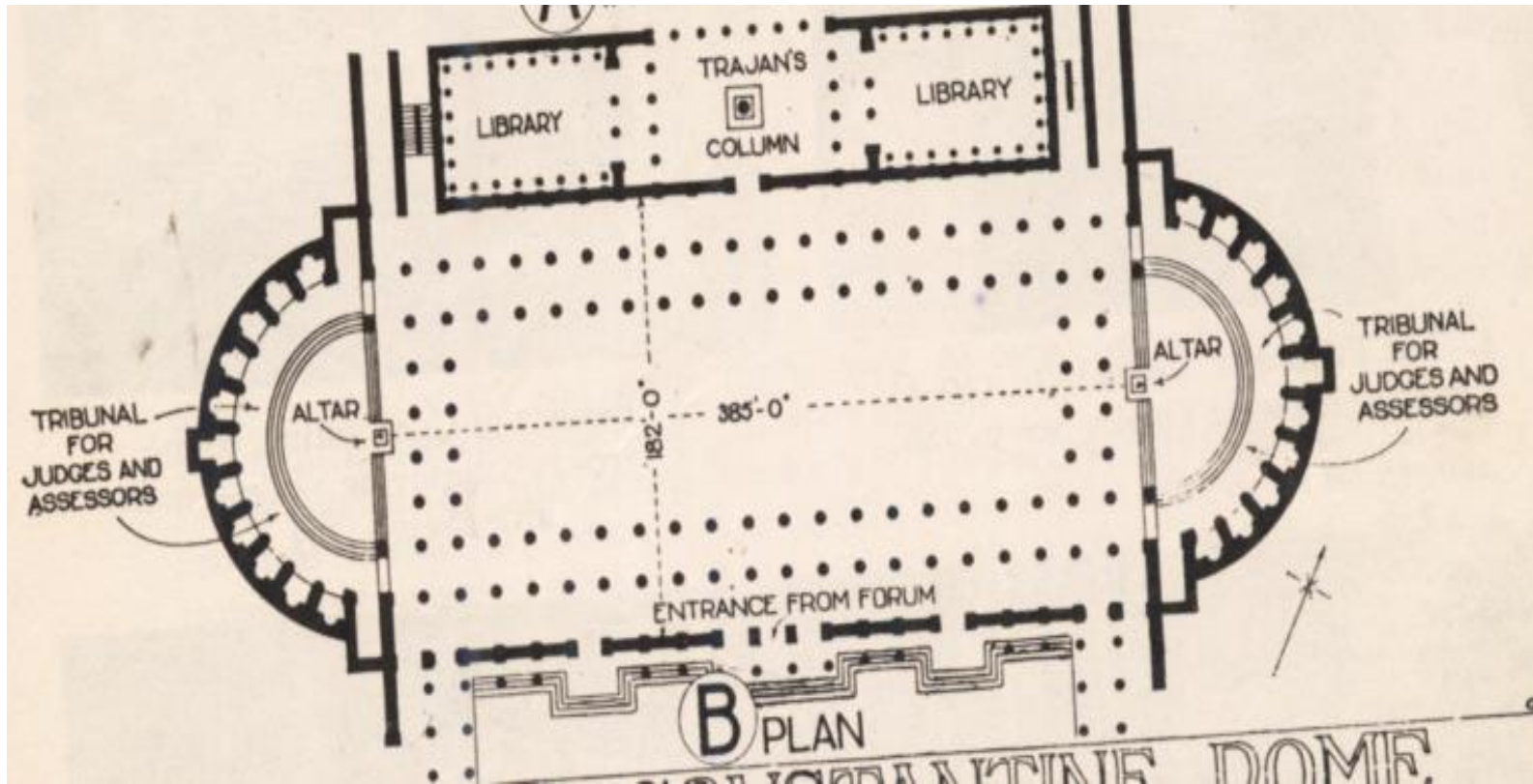


**Pont –du- Gard, Nimes**, France Over river Gard  
25 miles long- 155ft above river-  
Lower tiers - two rows arches – wide  
Uppermost tier – 35 arches- 14ft span-water channel-dry  
mortar



# **BASILICAS** – halls of Justice, commercial exchanges – link between Classic & Christian Architecture

**Plan** –Rectangular, twice as long – width,- rows of columns  
-nave, aisles. Timber truss roof.-simple unadorned exterior



**ROMAN – 1 Palaces or Country villa**

**2. Domus – private house**

**3. Insula – many storeyed apartments**

**Hadrians Villa -7sq miles –theatres, etc**

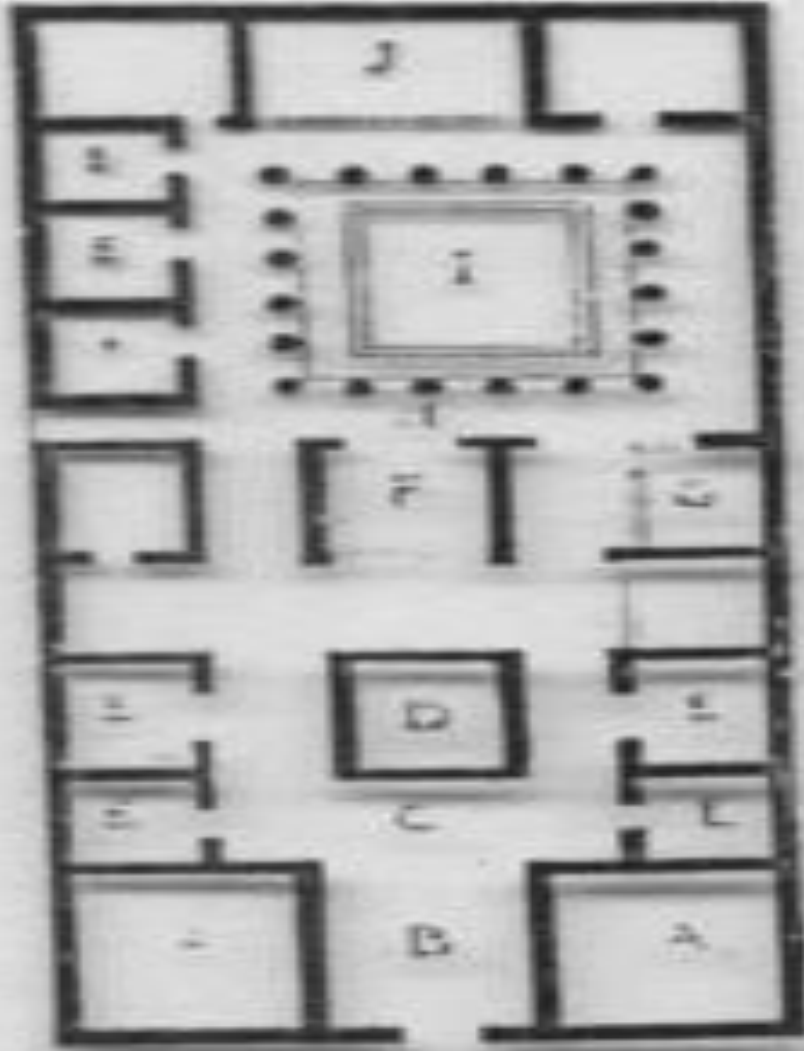
**Domus - no façade decoration**

**Vestibule –**

**Atrium-mosaic paved courtyard**

**Central pool – Pluvium**

**Atrium – dining hall, study, bedrooms**



# Insulae – 4,5,6 storeys high

