

# AIR POLLUTION HISTORY

with some interest in the

## ANCIENT MEDITERRANEAN




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# *PAN'S TRAVAIL*


J. Donald Hughes

John Hopkins University Press (1993)

- Overgrazing, deforestation erosion
  - Hunting and fishing – depletion
  - Industrial technology and damage
  - Agricultural decline
  - Urban problems
- 



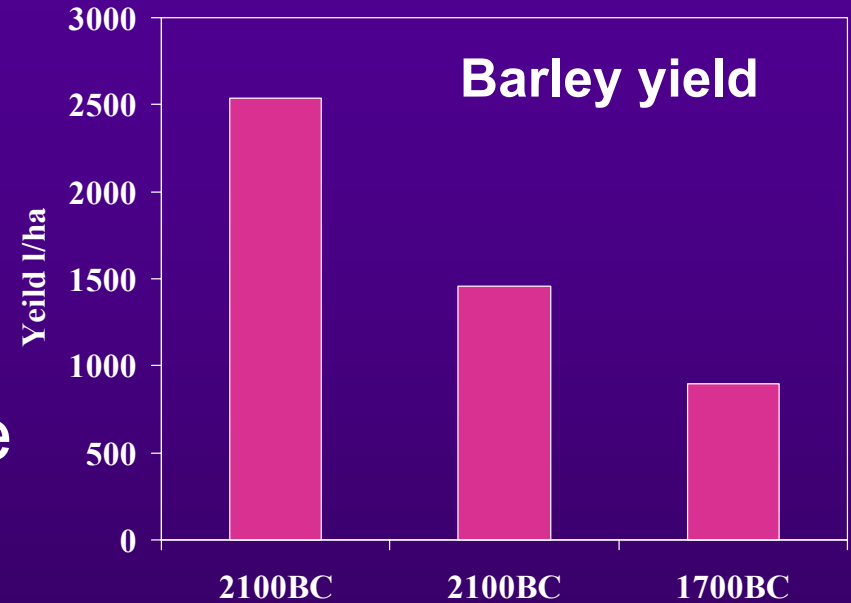
# AGRICULTURAL DECLINE

- Earth growing old
  - Rejected by Columella: - fertilizers
  - Fallow fields
  - Erosion
  - Climate change in late Roman times
  - Water supply
- 

# WATER FOR LARSA

Stanley D. Walters,  
Yale University Press, 1970

- Southern Iraq:  
gradual reduction in the cultivation of salt-sensitive wheat, replaced by salt-tolerant barley vanished by 1700BC



Jacobsen and Adams, *Science* 128, 1252 (1958)

# AIR: LIFE AND DEATH

“His smoke went up to the sky...”

Gilgameš, c.1.8.1.4



**air related to life...  
but also to death**

# SUMERIAN/BABYLONIAN ATTITUDES TOWARDS SMOKE

Don't cause the oven in a man's house to  
smoke... it will ruin the bread.  
my mood and heart. As if during the night watch  
my countenance like smoke.

A hymn to Inana for Išme-Dagan: c.2.5.4.  
Proverbs: from Nibru: c.6.2.1



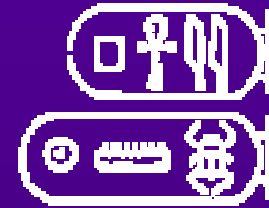
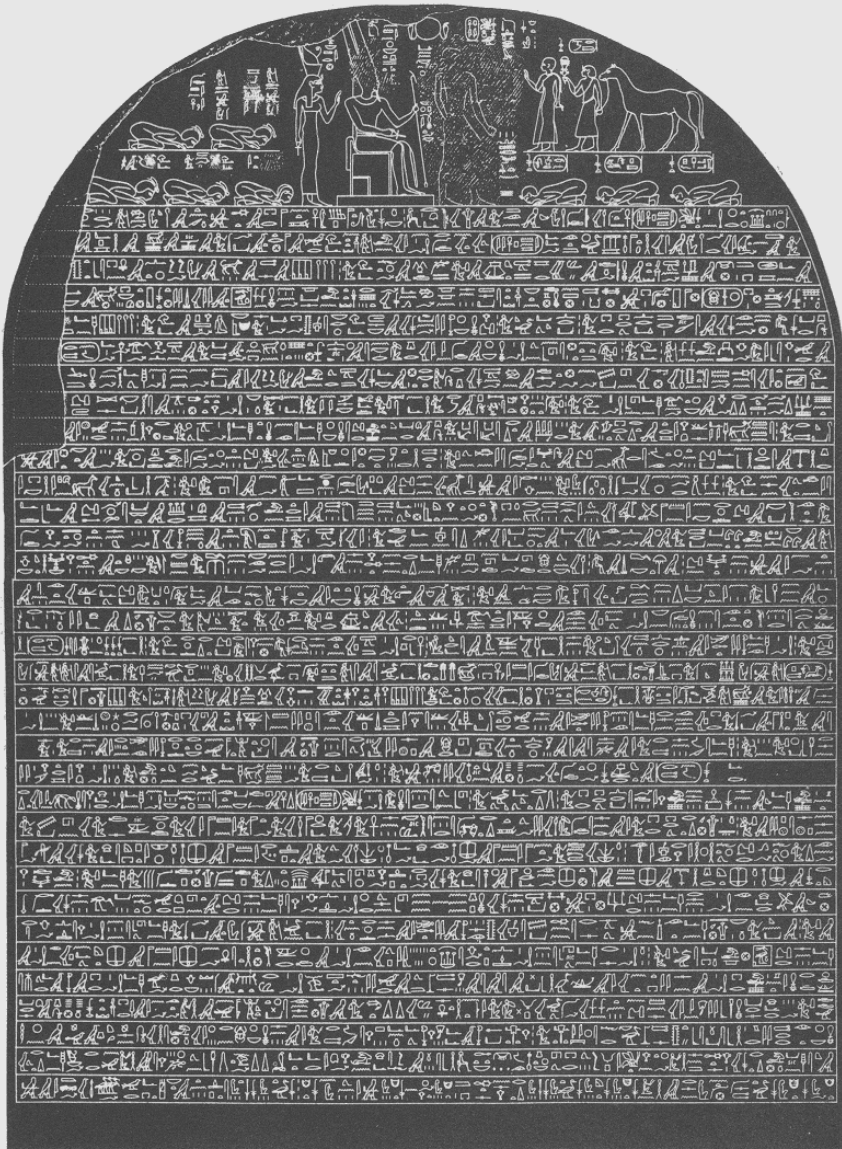
Temple of Inana

# RELIGIOUS CONTEXTS

- Typically religions see a relation between cleanliness and closeless to God
- Hence pollution and defilement often linked...

Mary Douglas: *Purity and Danger - an analysis of concepts of pollution and taboo* (1966)

# VICTORY STELA OF KING PIANKHI



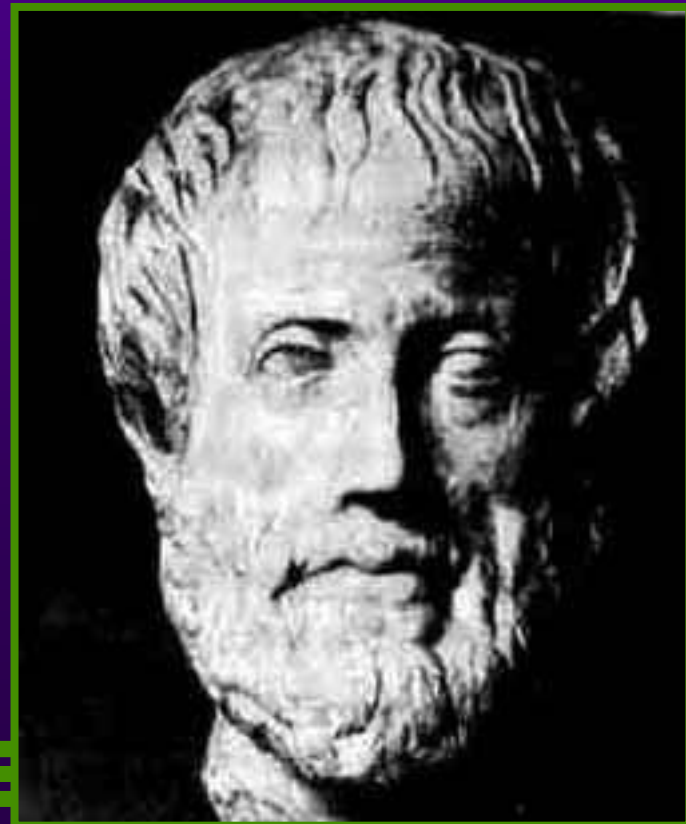
“Ur was a stench to the nose for lack of air to breathe and threw itself on its belly...”

**Seige of Hermopolis  
734 BC**



# ASTYNOMOI

- In Aristotle's *Athenian Politics*
  - duties of the *astynomoi* who are responsible among other things for rubbish to be deposited beyond city walls






# AIR AND HEALTH

- *The Hippocratic Corpus* had linked air and health
- Vitruvius on Architecture sought the proper location of dwellings





# SMOKE LIKE WATER

- *Urban servitudes*
  - Roman nuisance law treated neighbourly behaviour
  - Smoke often treated like water... you could no more let water drain across a house than smoke
- 

# LEGISLATING THE URBAN ENVIRONMENT

- Sextus Julius Frontinus (*Curator Aquarum*)
- Improved Rome's water improved the air (miasmatic theory)
- Rise of the professional administrator
- Moving industry (glass making) to suburbs

“Gravioris caeli...”

“Infamis aer...”

# BLACKENED BUILDINGS

DELICTA MAJORUM.

Your fathers' guilt you still must pay,  
Till, Roman, you restore each shrine,  
Each temple, mouldering in decay,  
And smoke-grimed statue, scarce  
divine

*Odes and Carmen Saeculare*  
Horace

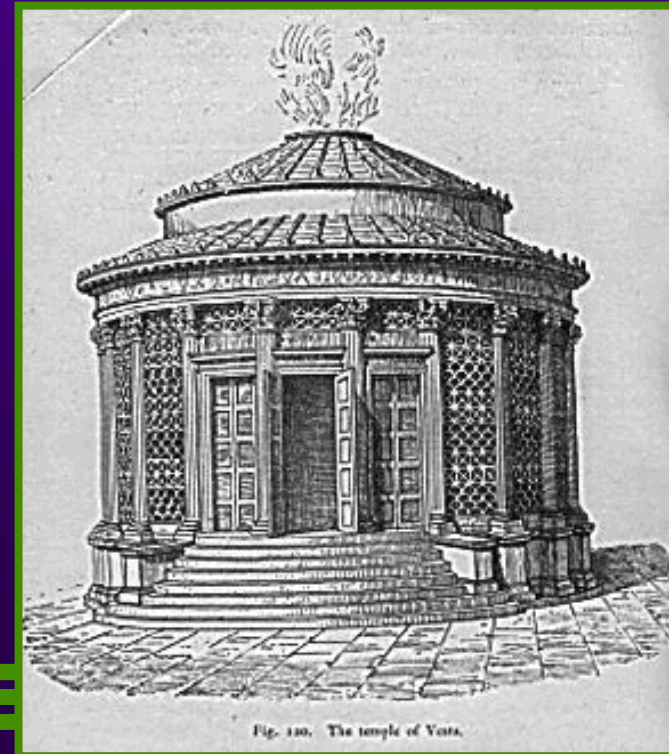


Fig. 110. The temple of Vesta.

# ROMAN URBAN ENVIRONMENT

- Seneca and culinary odours
- Loss of suntan
- Noise, traffic &tc....



David Bentley (MoLAS  
/Peter Froste, 1996

# EASTERN MEDITERRANEAN

1<sup>st</sup> 2<sup>nd</sup> Centuries

- *Mishnah Laws* called for >50 cubits (~25m) from a polluting source to a neighbour's residence.
- The prevailing wind to be considered for tanneries.
- Kilns and furnaces not allowed in Jerusalem to avoid soiling of buildings.



# RURAL AIR POLLUTION

High chimneys required to disperse  
the air pollutants silver production  
in Spain (about 7 BC)

Strabo (3.2.8 C142)



# INDOOR POLLUTION

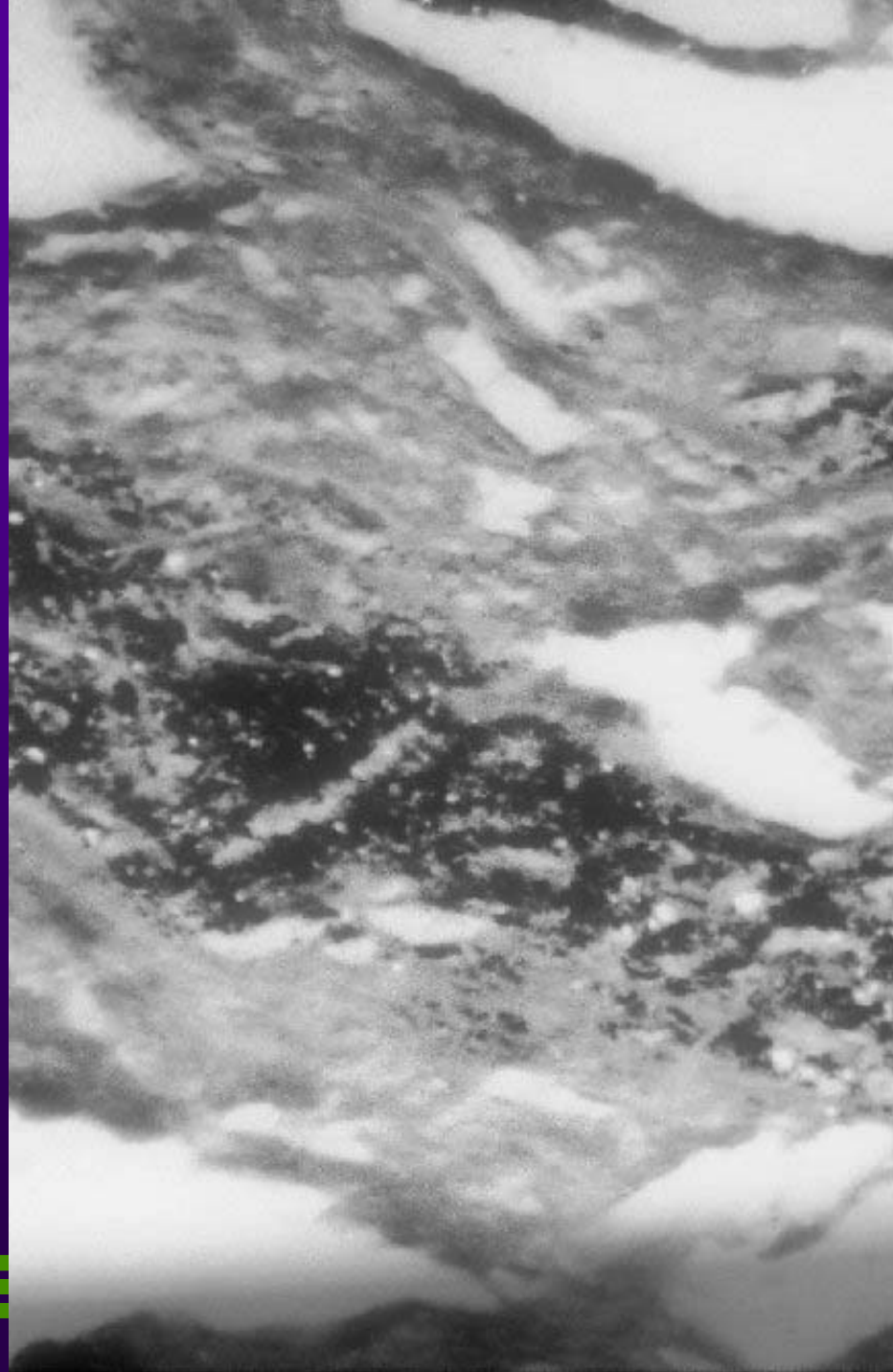
- The problem is ancient - weapons of Odysseus
- Concern is long term e.g. smoky fireplaces





# ANTHRACOSIS SILICOSIS

Archeological evidence  
shows air pollutants in  
the lungs of mummies



# PLEUROSIS IN ROMAN TIMES

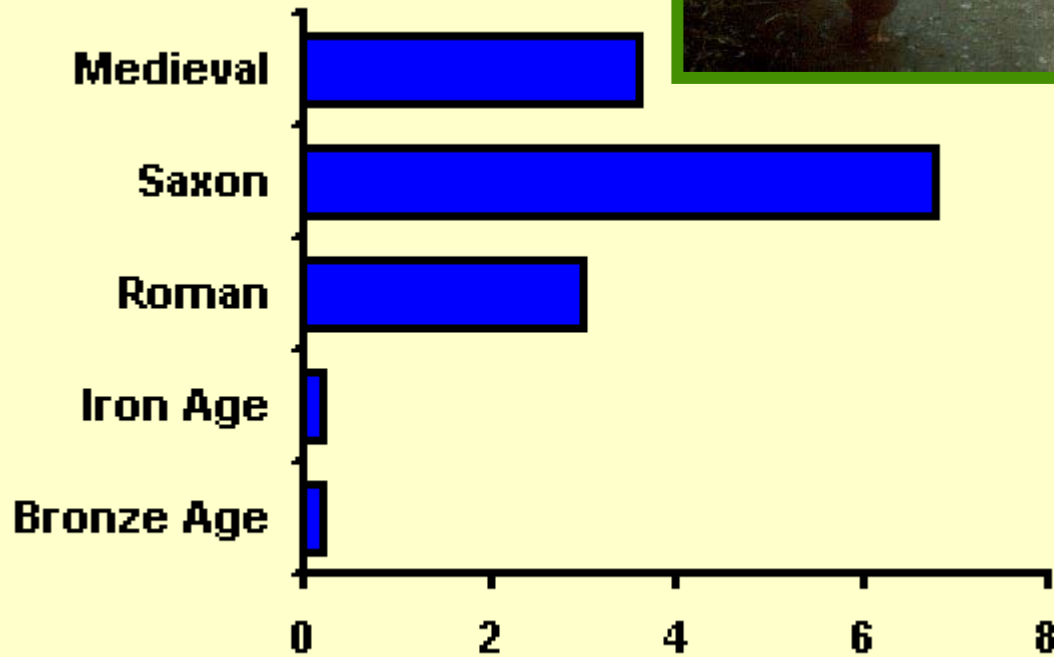
- Rib lesions: evidence of indoor pollution from burning vegetable matter lamp oils at Herculaneum



*Lancet* 356, 1774 (2000)  
L. Capasso

# SINUSITIS

Common in Saxon times



Often related to lack of chimneys

# CLASSICAL REVIVAL AND EASTERN TRADITIONS

- Hippocratic tradition maintained
- Al-Razi 850-925: Hung meat throughout Baghdad to assess site of hospital
- at Tamini of Jerusalem (932-1000) *Survival Materials Treating Air Spoilage and Avoiding Dangers of Epidemics*
- Ibn al-Qayyim (-1350) *Prophetical Medicine* – stench and putrefaction related to disease

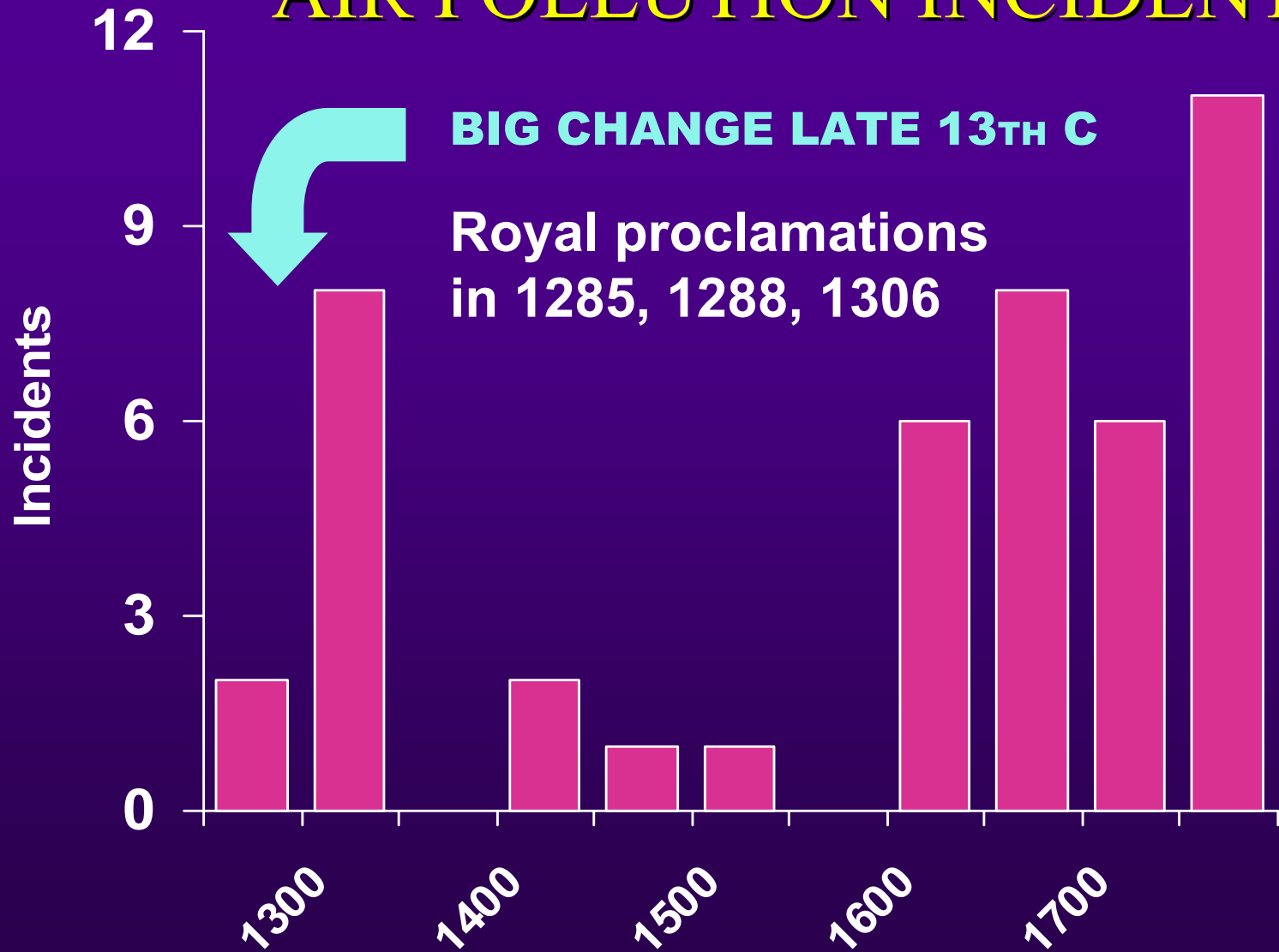
***Preoccupation with organic contaminants***

# MEDIEVAL ENGLAND

- Fuedal society at its height in 13<sup>th</sup> century
- London an active capital
- Fast developing law under Edward I



# AIR POLLUTION INCIDENTS

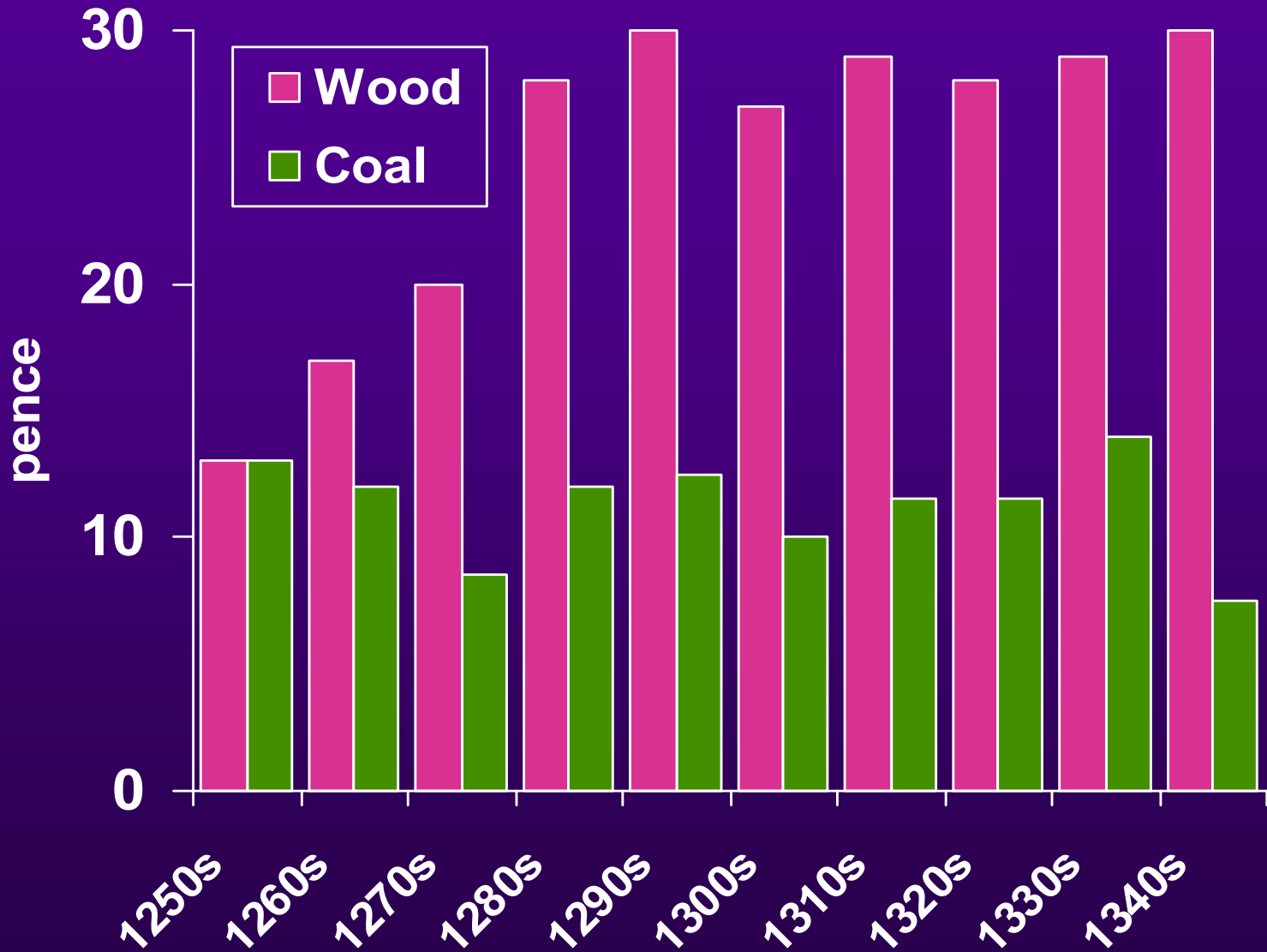


# FUEL FOR MAKING CEMENT

- Building at Westminster  
1253 Henry III ordered oak  
brushwood
- Order of 23 July 1264 “purvey for  
the King in London... a boat load  
of sea-coal”



# PRESSURES TO CHANGE FUEL

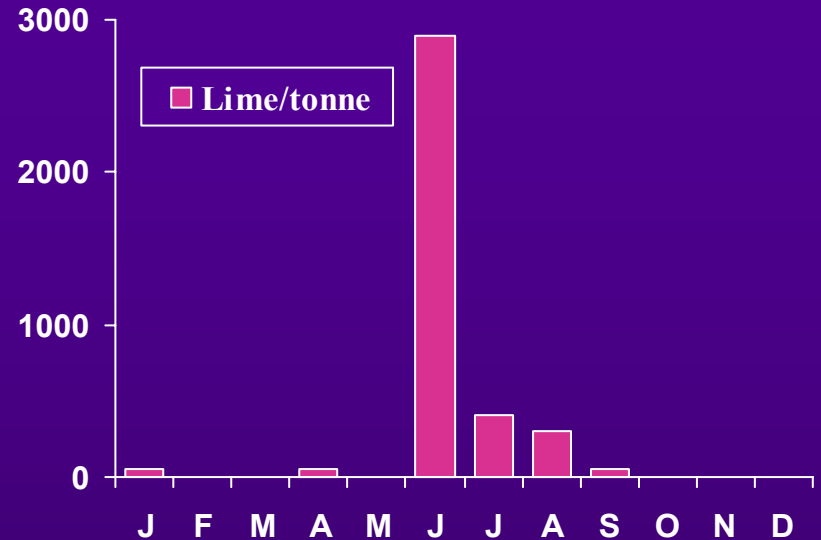


# POLLUTION SEASONS c1300

Summer building works:  
extensive production of lime

Air pollution incidents  
mostly in summer

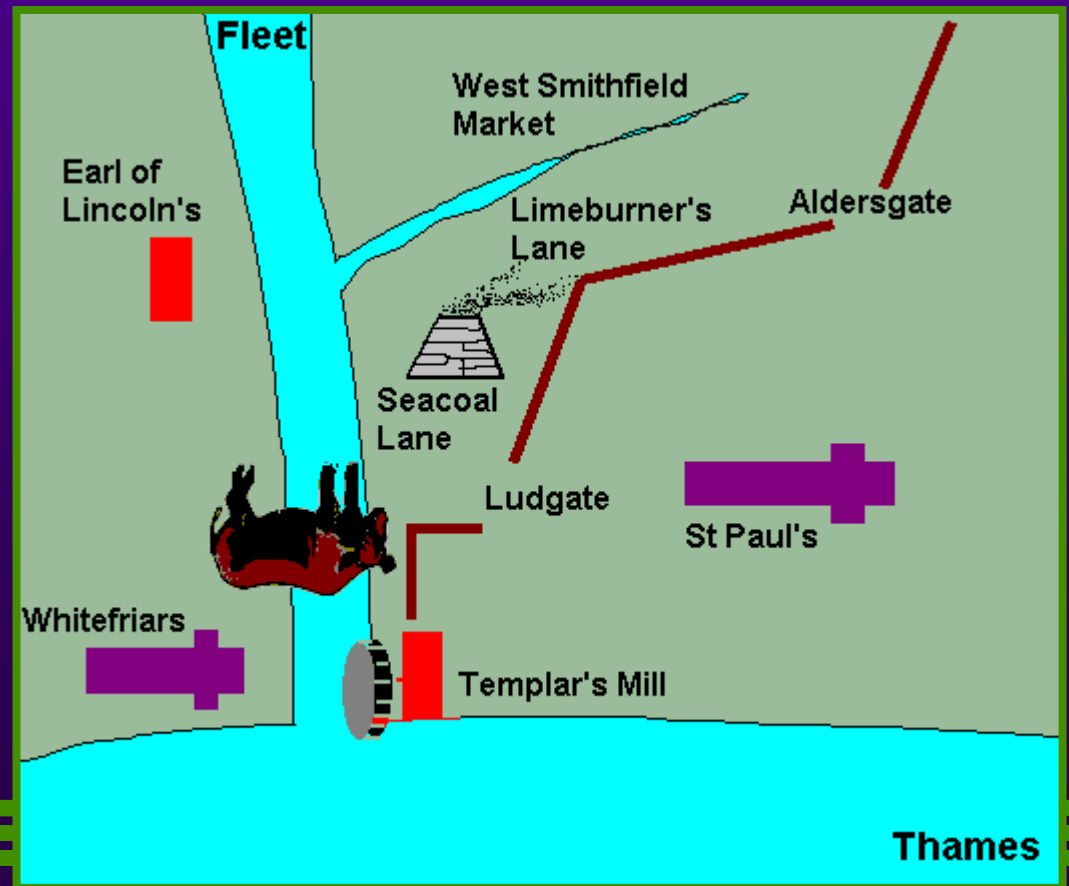
In 1950s smoke a winter  
problem - household heating



# POLLUTION SOCIAL CONTEXT c1300

## Problems near the River Fleet

- Professionals
  - Earl of Lincoln
  - John de Cobbeham
- Coal use
- Odour
- Hang the polluters?





# CHIMNEY HEIGHTS

“... the chimney is lower by 12 feet than it should be.... And the stench of smoke from the sea-coal used in the forge penetrates their hall and chambers so that (earnings drop to a third)”

*London Assize of Nuisance (1301-1431)*





# BLACKSMITHS

- A group of black smiths in 14<sup>th</sup> century London thought that sea-coal should not be burnt at night

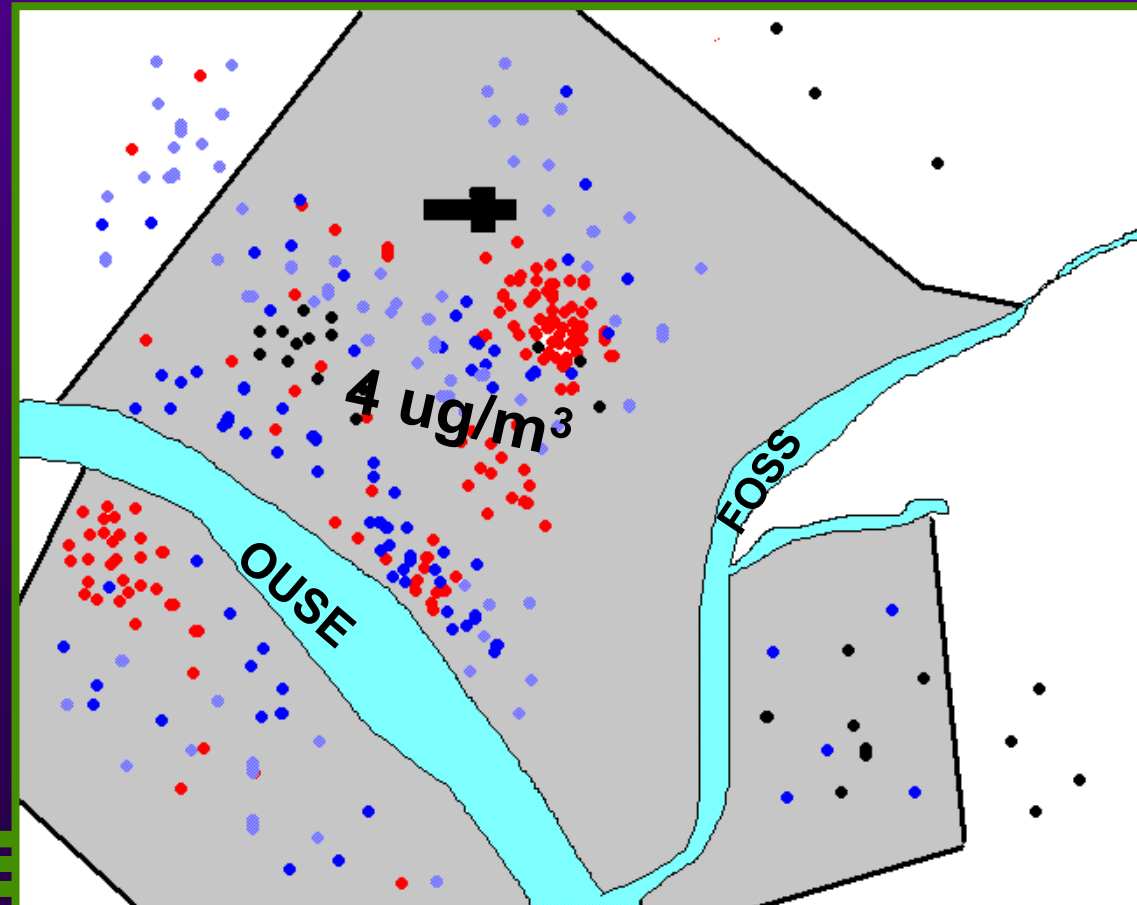
*Cal Early Mayor's Court Rolls*



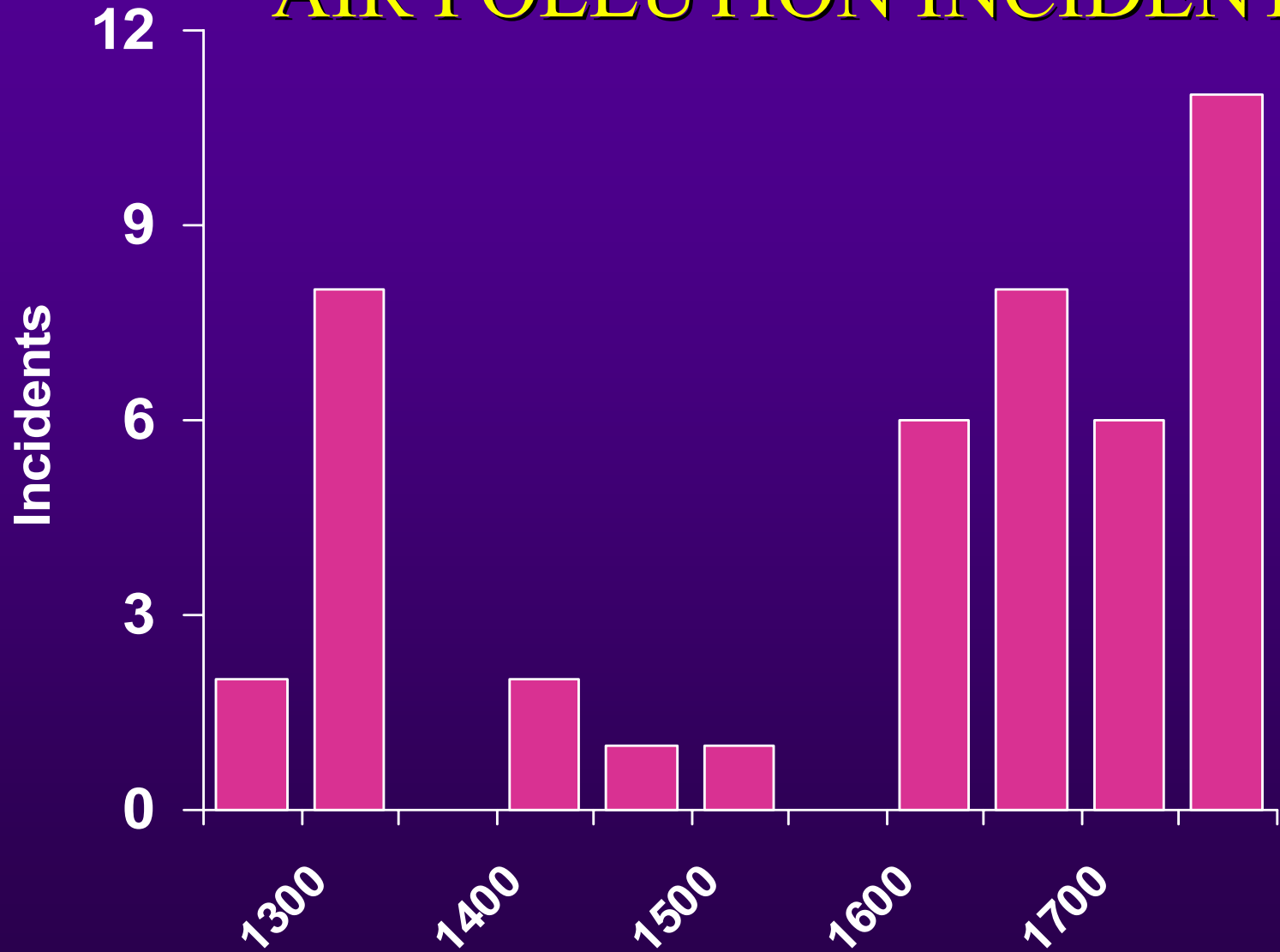
# YORK 1381

- Poll Tax establishes industrial locations
- Extramurality
- Annual wood use

- Dyers Bakers
- Tanners Butchers
- Metal workers
- Chandlers Glaziers, Tilers



# AIR POLLUTION INCIDENTS



# William LAUD

- Losing you head over air pollutants
- boring or brewing



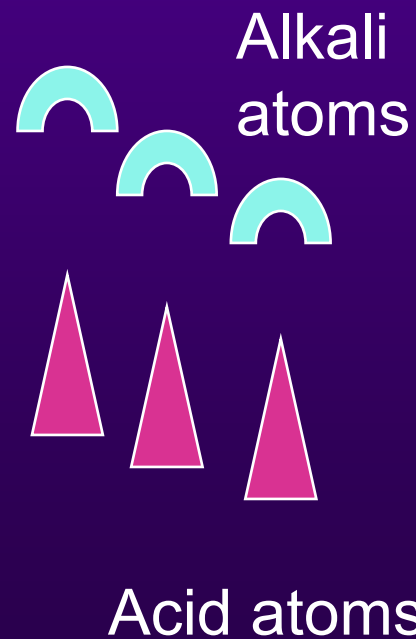
# Sir Kenelme DIGBY

“Coal hath...

volatile salt very sharp...”  
dissipated to atoms  
in smoke

*A Discourse on Sympathetic Powder 1658*

Van Dyck



# Margaret CAVENDISH -

## *the ornament of England*



“Why that a coale should set a  
house on fire  
Is, Atomes sharpe are in that coale  
entire  
Being strong armed with Points, do  
quite pierce through;  
Those flat dull Atoms, and their  
forms undo.”

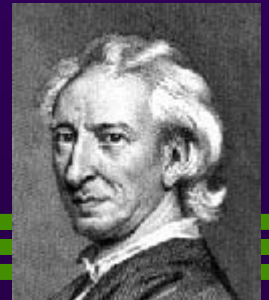
*Poems and Fancies 1653*

# John EVELYN

Robert Walker  
1648



- Diarist, gardener and environmentalist
- *Fumifugium* 1661
- Many schemes to improve London and its air



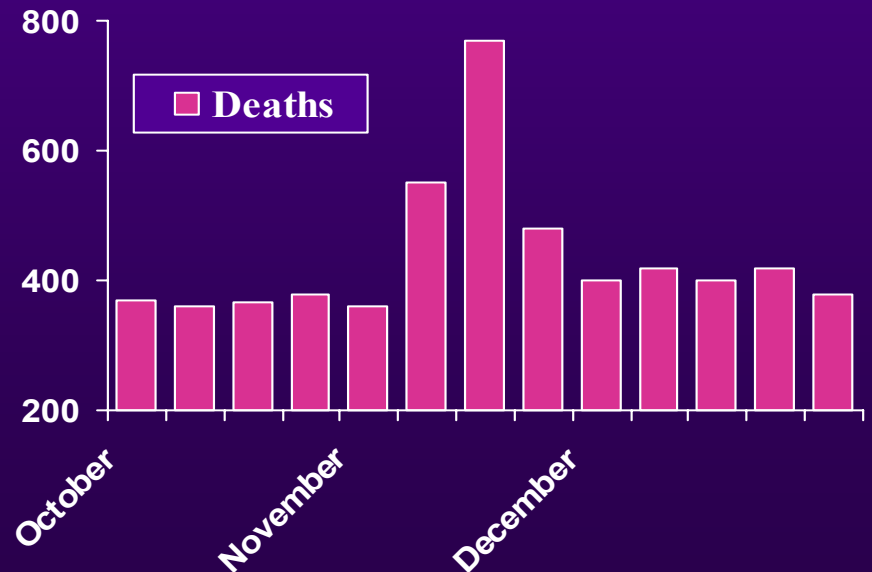
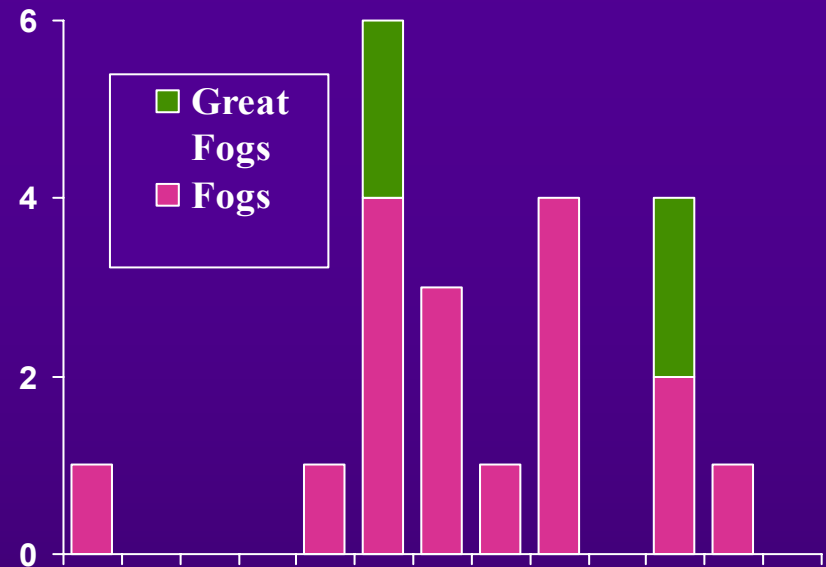
# John GRAUNT & DEATH by FOG

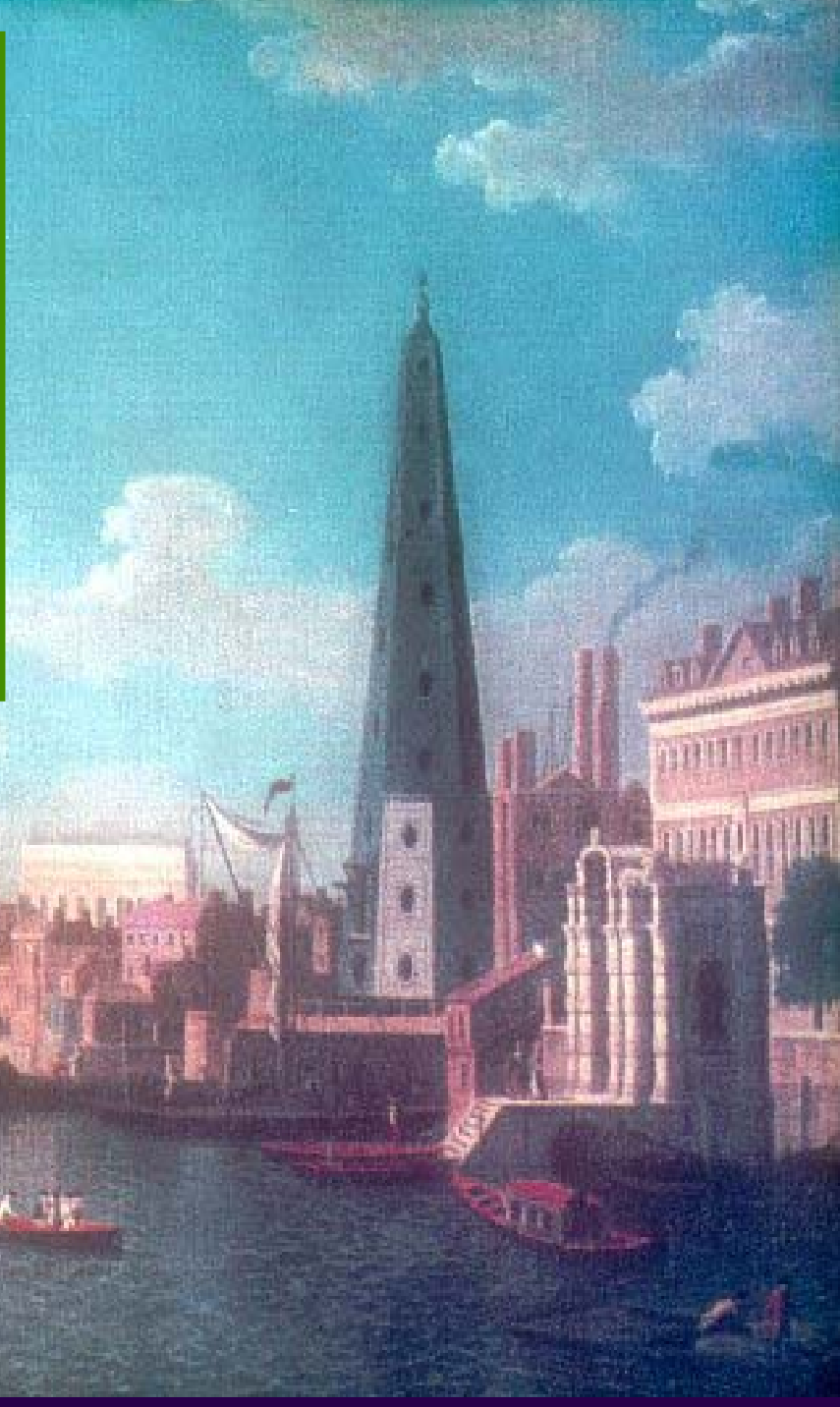
The winter of 1679

Deaths very high after  
weeks of fog

Especially from tisick and  
among elderly


Weekly observations







# LESSONS FROM HISTORY

- Fuel use/change a dominant control
  - Local nuisance regulation
  - Health dominates over aesthetics
  - Problems emerge, reach some kind of crisis and then decline to be overtaken by others
  - Control measures chimney heights and zoning
  - Professionalisation
  - Nationalisation
- 

# THE END



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