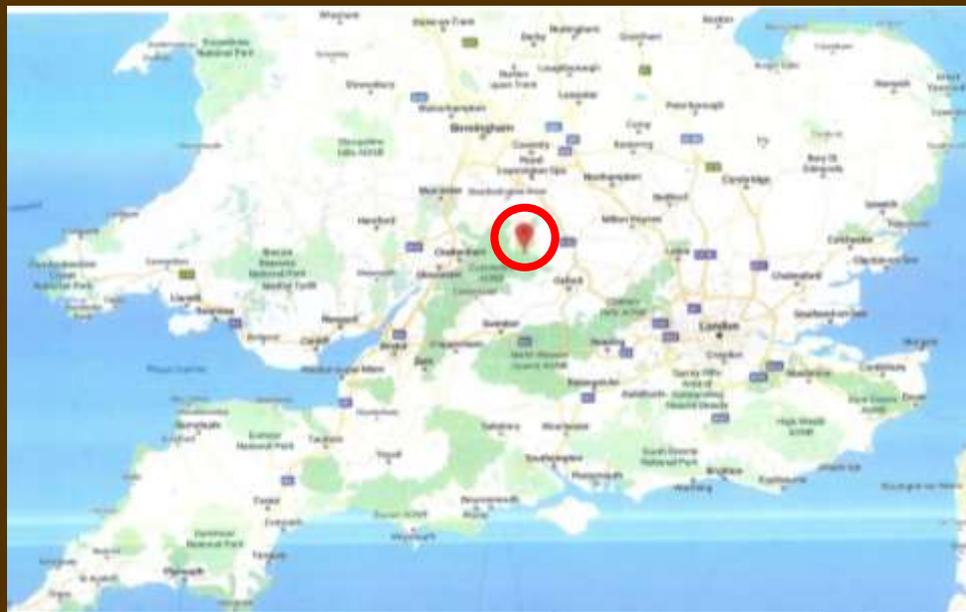


*Presented at the FIG Working Week 2019,
April 22-26, 2019 in Hanoi, Vietnam*

“STRATA”

SMITH:

**THE SURVEYOR WHOSE MAP
CHANGED THE WORLD !**



**WILLIAM
“STRATA”
SMITH
BORN AT
CHURCHILL
MARCH 23,
1769**



NEW YORK TIMES BESTSELLER

SIMON
WINCHESTER

AUTHOR OF THE INTERNATIONAL BESTSELLER
THE PROFESSOR AND THE MADMAN



~ The ~
MAP THAT CHANGED
the WORLD



WILLIAM SMITH *and the*
BIRTH *of* MODERN GEOLOGY



"Winchester brings Smith's struggle to life in clear and beautiful language."
—NEW YORK TIMES BOOK REVIEW

P.S.
INSIGHTS,
INTERVIEWS
& MORE...

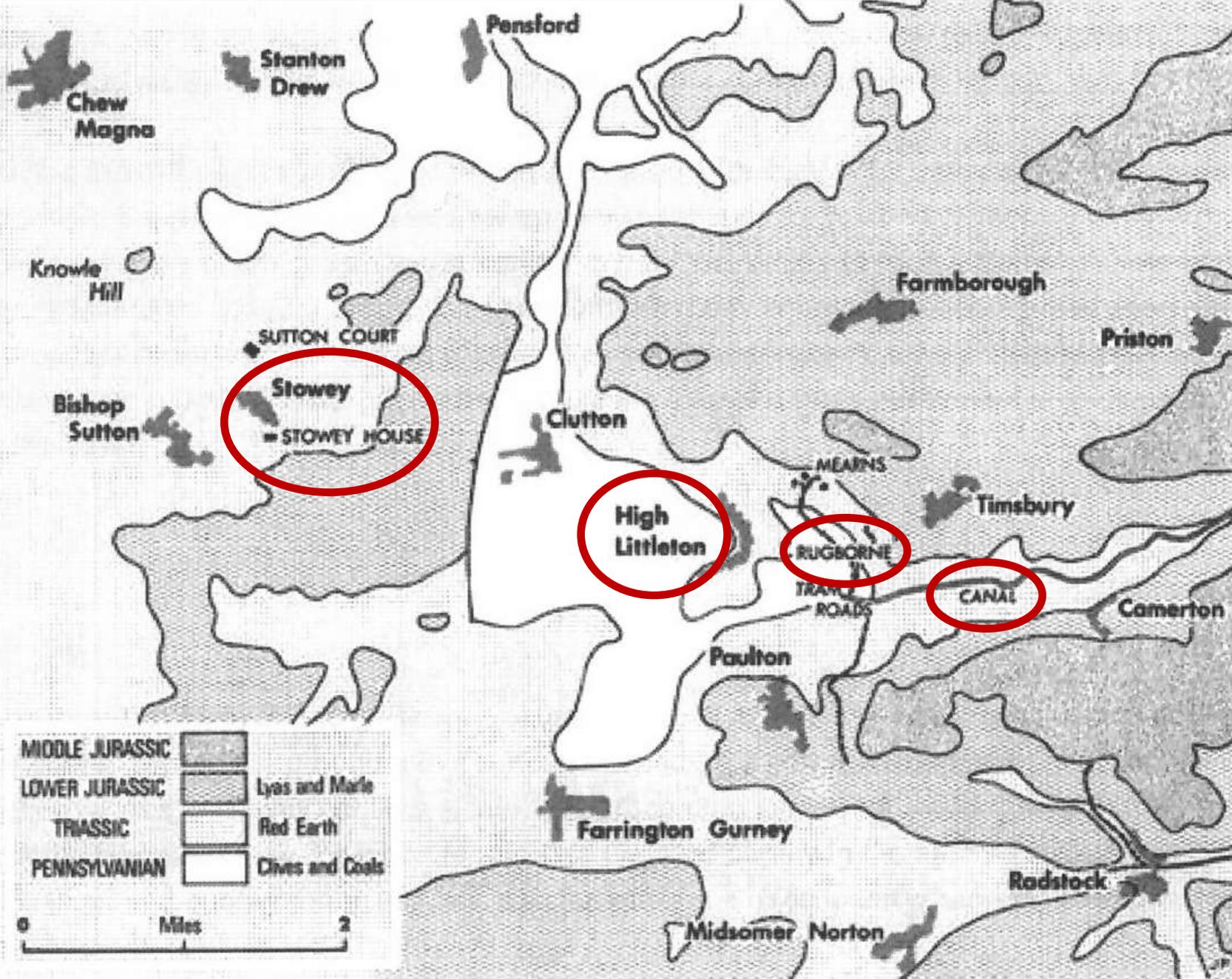
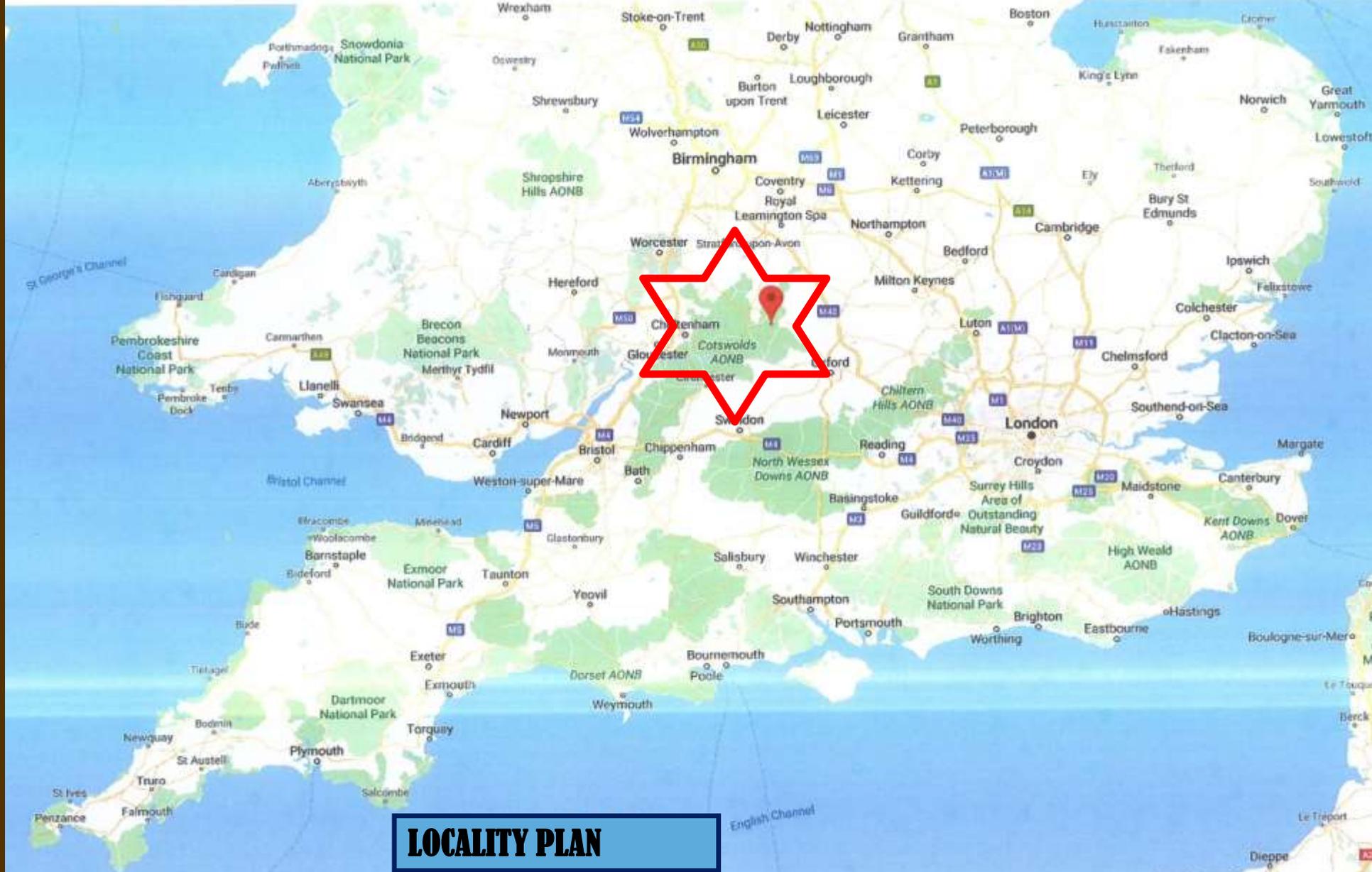


Figure 1. Reference map of the area around Sutton Court, Stowey, Farrington Gurney, and High Littleton, Somerset.



LOCALITY PLAN

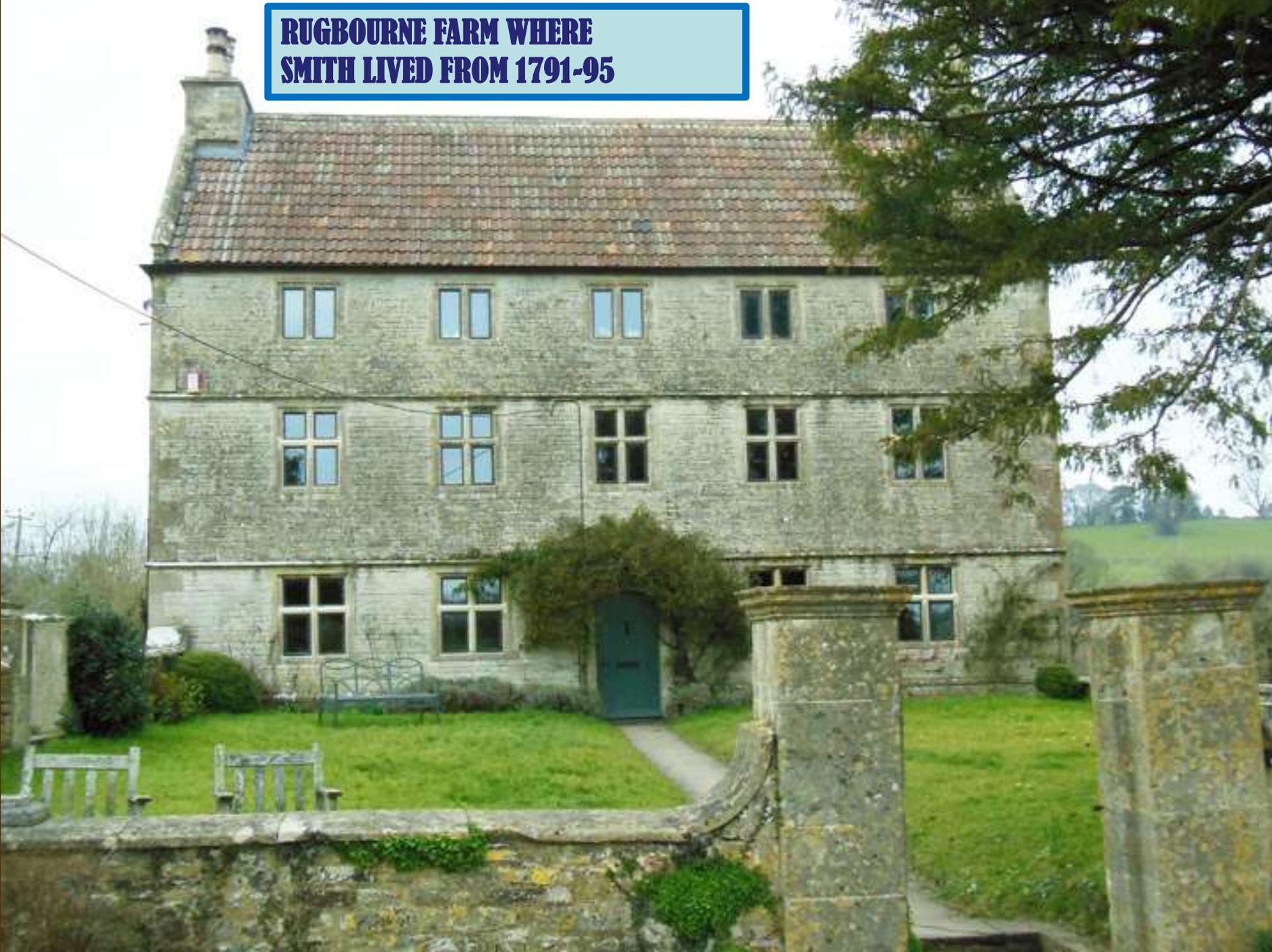
CHURCHILL, OXFORDSHIRE AND THE COTSWOLDS



**WILLIAM SMITH (1769-1839) STAYED WITH
EDWARD WEBB (SURVEYOR) IN THIS HOUSE
FROM 1787 TO 1791. SMITH'S PIONEERING
GEOLOGICAL MAP OF BRITAIN IN 1815
EARNED HIM THE TITLE
"FATHER OF ENGLISH GEOLOGY"**

STOW AND DISTRICT CIVIC SOCIETY

**RUGBOURNE FARM WHERE
SMITH LIVED FROM 1791-95**



The
PENTLOW HALL ESTATE.

the Property of the

REV^D E. W. MATHEW,

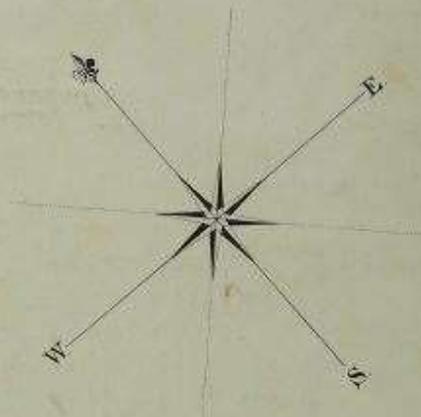
Containing

In Pentlow ——— *3 2 7*
 203 5 13

In Caversham ——— *74 2 9*

Total ——— **277 7 22**

Surveyed by
John James
 1832



REFERENCE.

No	Names of Fields	Arable	Planted Boswell
	<i>Pentlow Hall, official yards</i>	<i>4 2 7</i>	
1	<i>Gardens and Pleasure grounds</i>		<i>0 0 10</i>
2	<i>Dairy House, outbuildings and yards</i>		<i>1 0 10</i>
3	<i>Gardens</i>		<i>1 0 10</i>
4	<i>Garden Oranges</i>	<i>10 2 0</i>	
5	<i>Apple Oranges</i>	<i>4 2 30</i>	
6	<i>Leather Oranges</i>	<i>6 2 27</i>	
7	<i>All other Plantations</i>		<i>0 0 0</i>
8	<i>All other</i>	<i>11 2 0</i>	



B. Brograve 14th
Bar^o
exchanged to
W^m Postle
8.1.37

Brograve Bar^o

135
St G. B. Brograve
2.2.33

Great Skollers

159
160
161
2.0.16



133
St G. B.
Brograve
Bar^o
6.1.0

Dean & Chapter
exchanged to
St G. B. Brograve
1.3.14

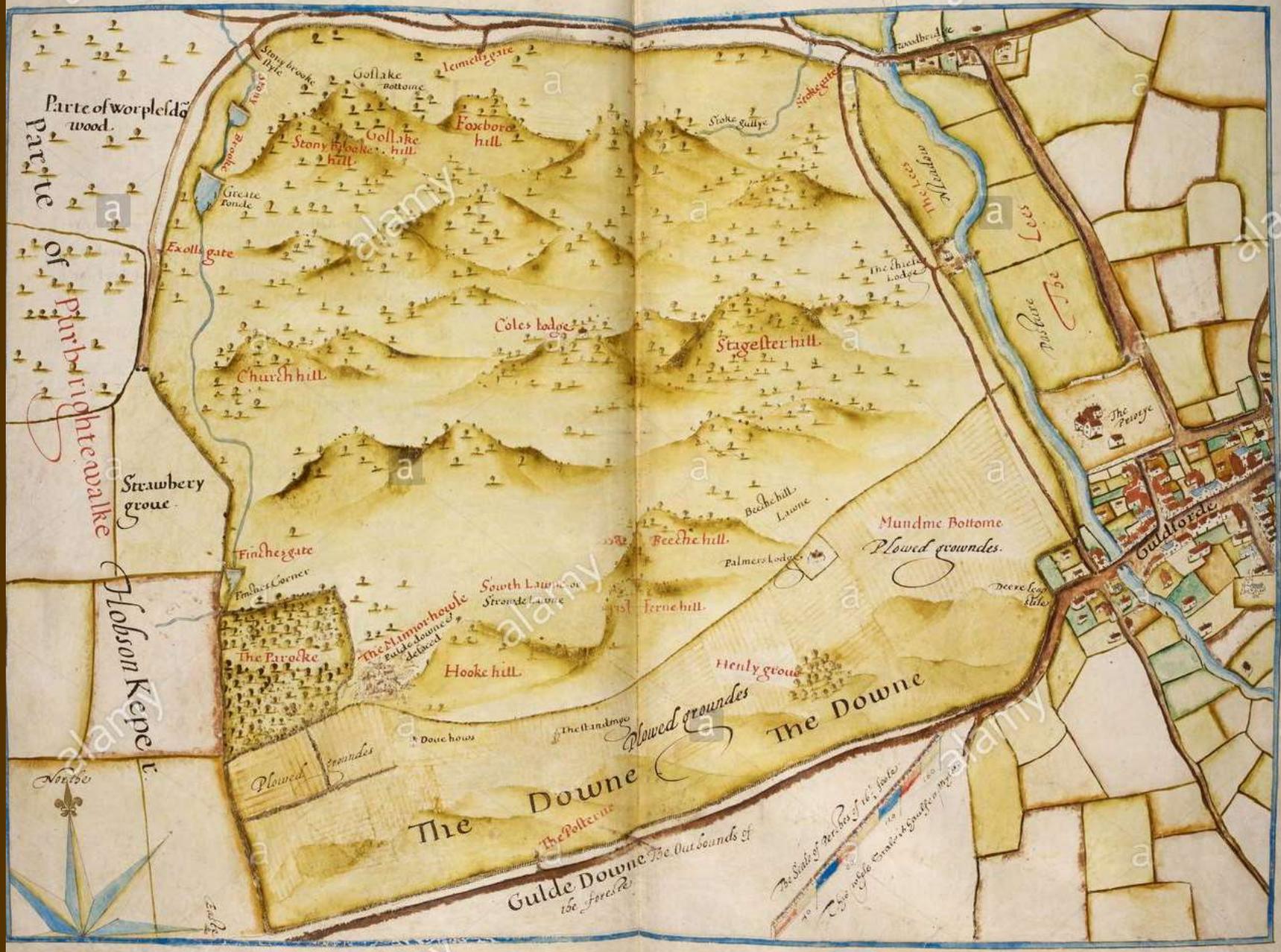
15th
Dean & Chapter
exchanged to
St G. B. Brograve
11.5.27

16th

St G. B. Brograve



CHELMSFORD ESTATE PLAN (1591)



Parte of worpleld wood.

Parte of Purberightewalke

Strawbery groue

Hobson Kepe

North



Plowed groundes

The Downe

Gulde Downe
The Out bounds of the forest

The Scale of Perches of 160 fathoms
The Scale of Acres of 160 fathoms
The Scale of Miles of 160 fathoms

Stony brooke
Stony brooke
Gollake
Gollake
Seony brooke
Gollake
Foeborne hill
Lemeth gate

Exolls gate

Church hill

Coles lodge

Stoke gullye

Stagester hill

Finches gate

Finches Corner

The Paroke

The Almorhouse
Futle Downe
defaced

Hooke hill

South Lawne
Stronde Lawne

Beeche hill

Palmeres lodges

Ferne hill

Beeche hill
Lawne

Mundme Bottoome
Plowed groundes

Henly groue

Plowed groundes

The Downe

Worpleld

Stoke gullye

Worpleld

The Paroke

Gulde Downe

The Paroke

Gulde Downe

Parte of Crefwells walke

Parte of Crefwells walke

The New grounde

The Lodge

LITTLE PARKE

The Stande

The Coule

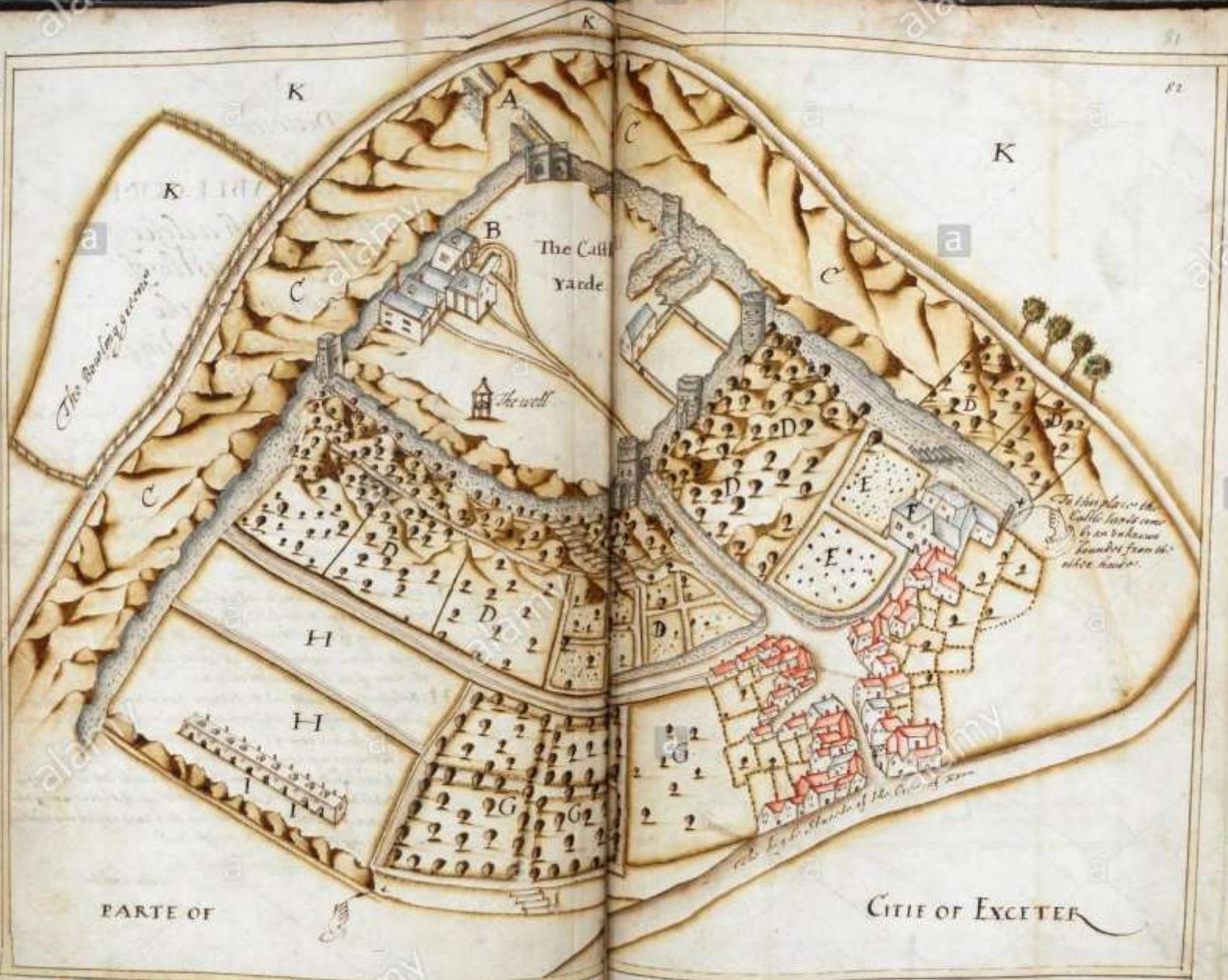
The Orchard

The garden

Wardrope

The Lower grounde





PARTE OF

CITIE OF EXETER

**LADY
ELIZABETH
JONES, ONE
OF WEBB'S
GLAMOROUS
CLIENTELE
FOR WHOM
SMITH
SURVEYED
HER VAST
ESTATE**

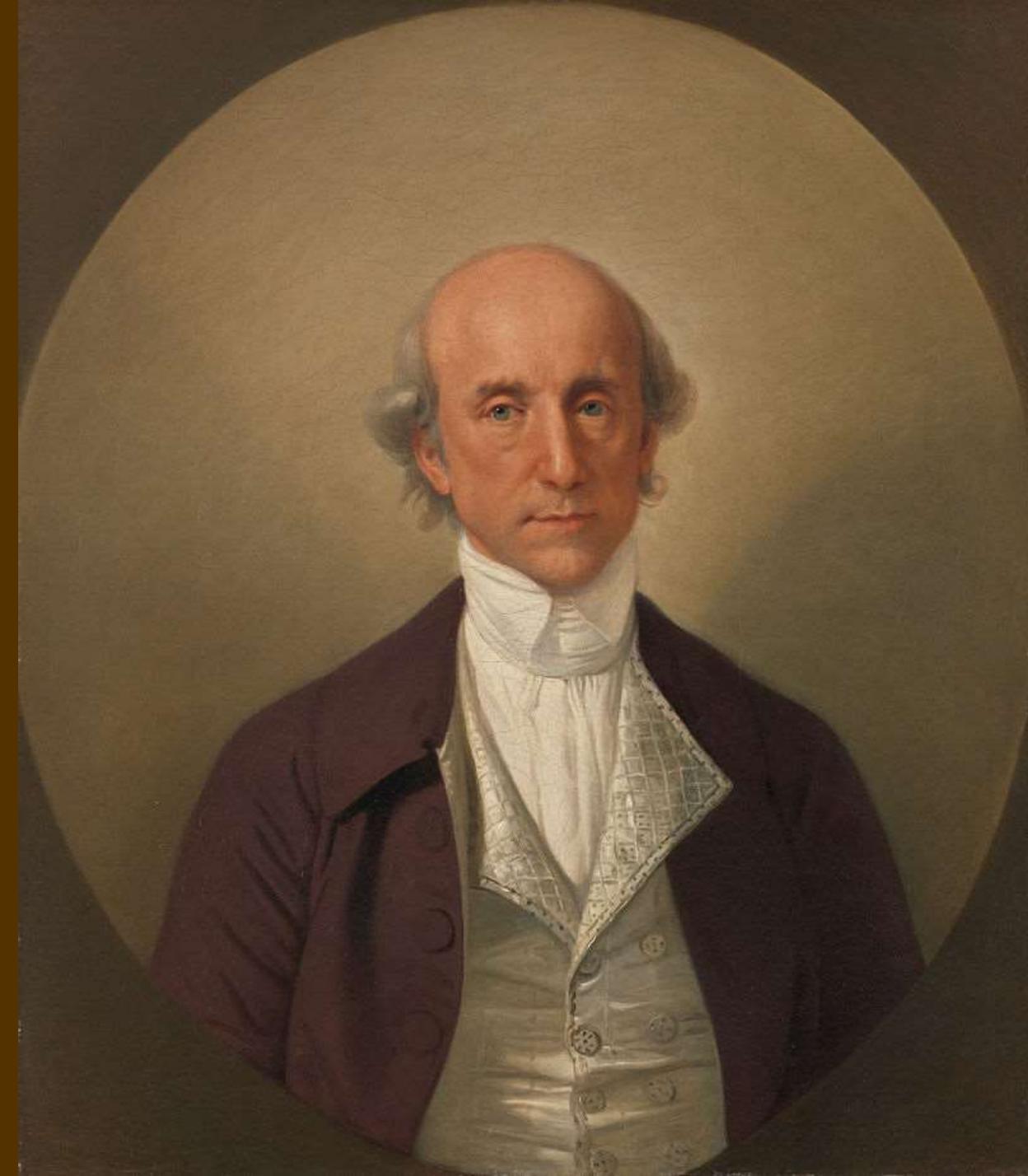




**STOWEY HOUSE OWNED
BY LADY ELIZABETH JONES**



MARKET SQUARE AT STOW ON THE WOLD



**WARREN
HASTINGS,
OWNER OF
DAYLESFORD
HOUSE.
HASTINGS
WAS
GOVERNOR-
GENERAL OF
INDIA**



DAYLESFORD HOUSE AT WORCESTERSHIRE





DAYLESFORD HOUSE



The County of
DORSET

SURVEYED by ISAAC TAYLOR
Reduced from the larger Map in Six Sheets
AND PUBLISHED

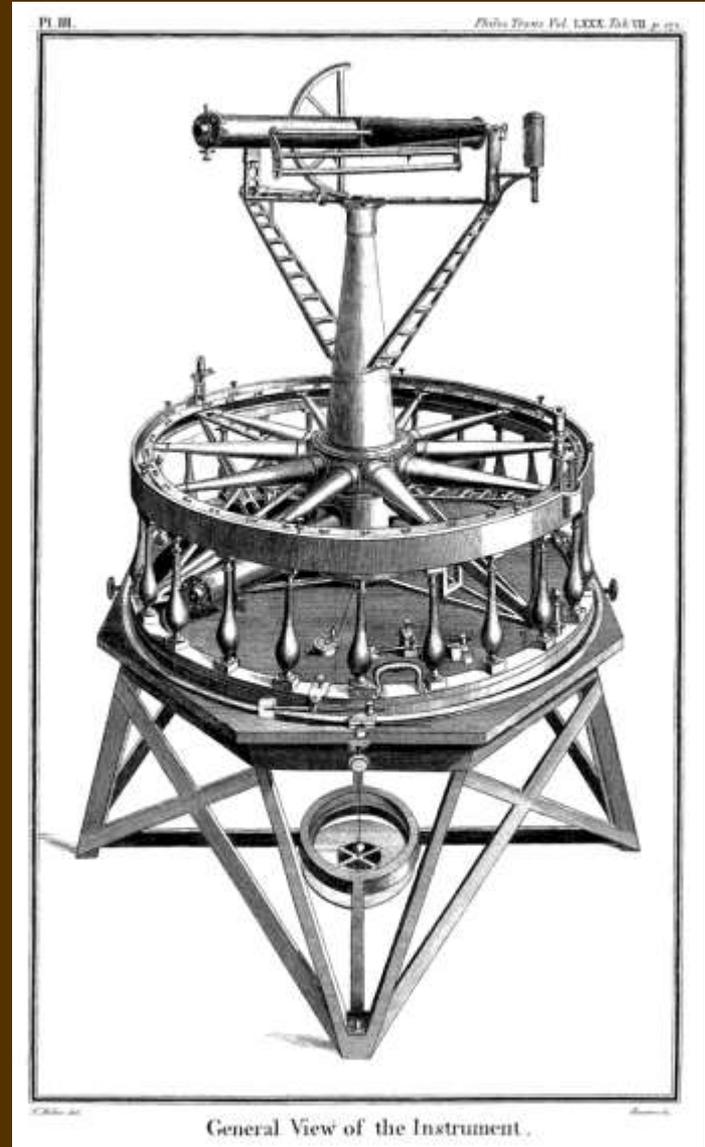
by a Scale of two Double Miles to an Inch

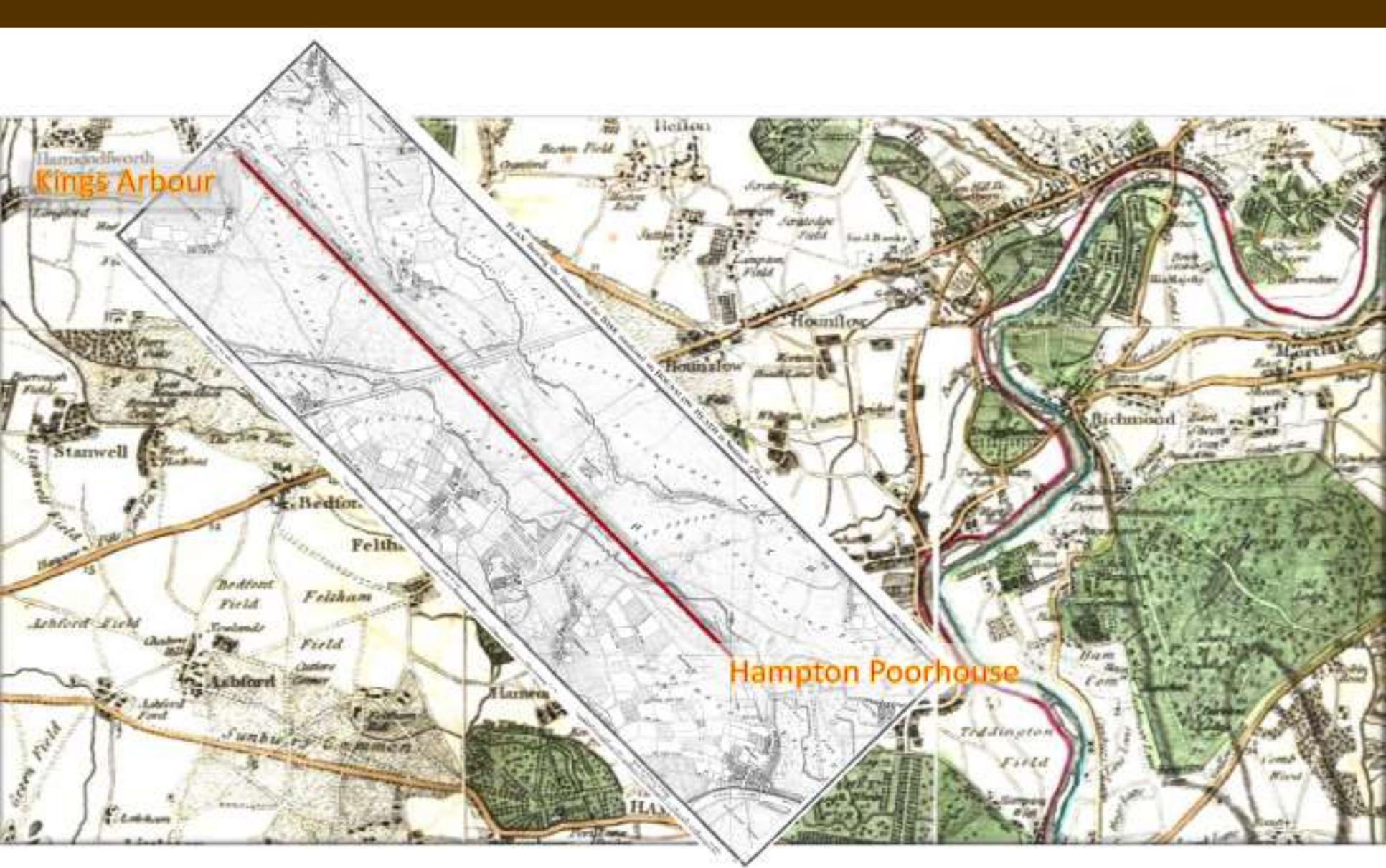


In the prosecution of the General Survey, frequent opportunities have manifested themselves of enabling us to discover the very erroneous state of our maps. The work itself, will enable any one to draw the same conclusion; for, by laying down on the maps of counties, particularly on Taylor's Map of Dorsetshire, the distances of the intersected objects, as *Dorchester Church* from *Ninebarrow Down*, (p. 325,) where an error of nearly three miles is detected in a distance of eighteen, an immediate proof is obtained of their great inaccuracy. Taylor's Map of Dorchester is here specified, because we think it is the most erroneous of any we have examined; yet those of Devonshire and Kent, may be considered as similar specimens of imperfect topography. The only maps which have passed under our notice, worthy commendation, are those of Surrey and Sussex; the former by Mr. Linley and Mr. Crossley, the latter by Mr. Gardner. These maps are indebted to the recent trigonometrical operations for their accuracy. General Roy's afforded *data* for the Survey of Surrey, and our own copious materials for that of Sussex;

E N G L I S H

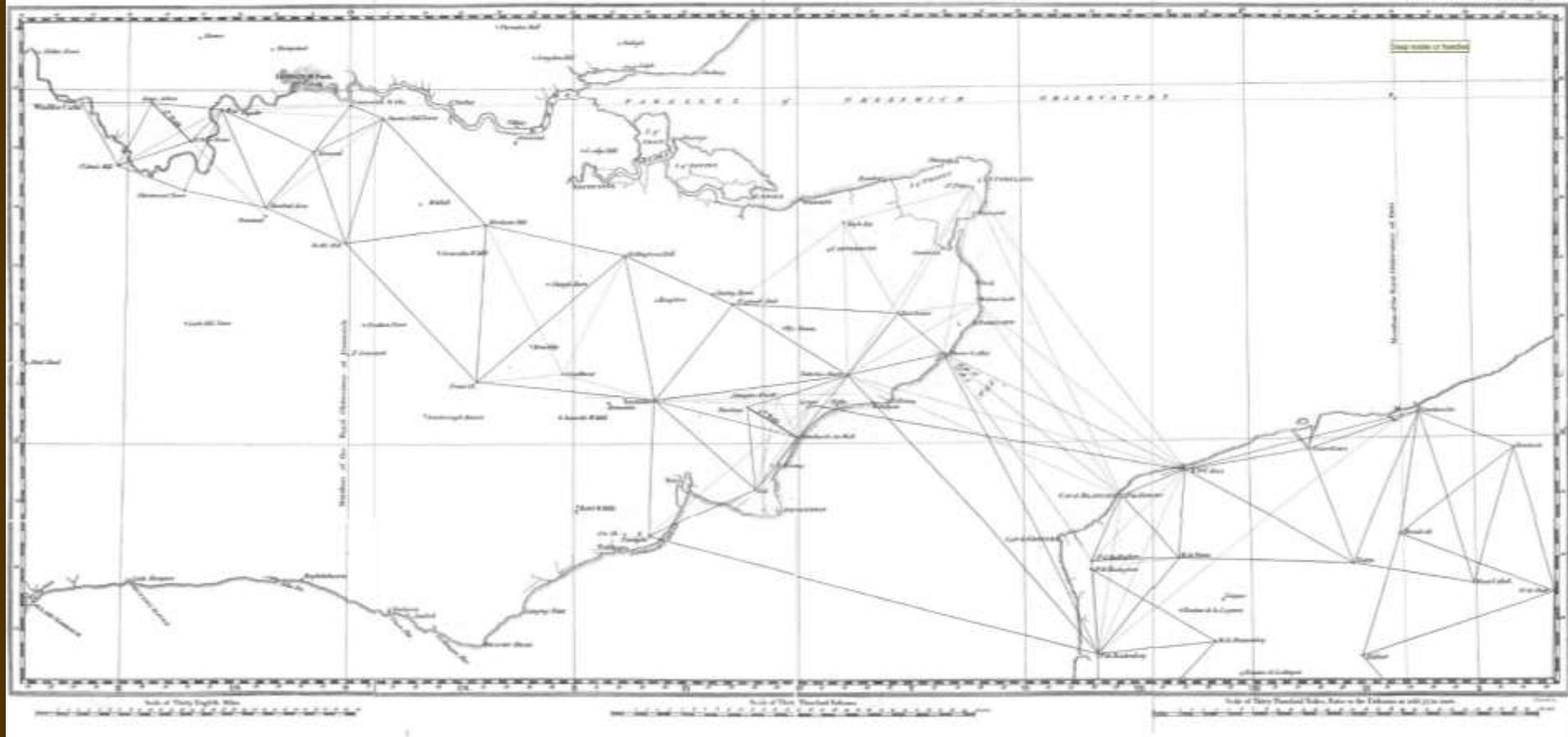
C H A N N E L

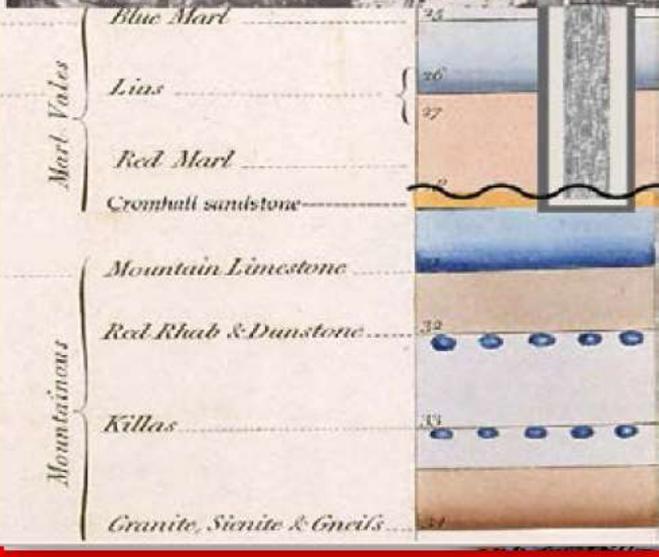
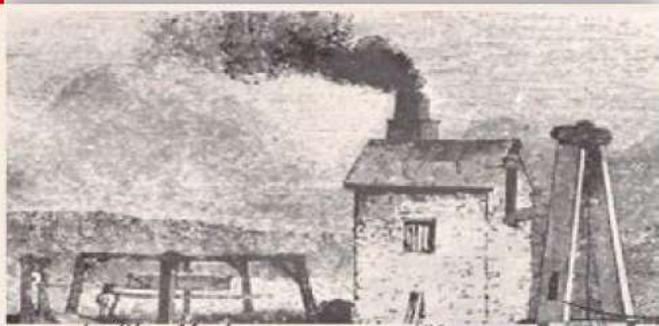


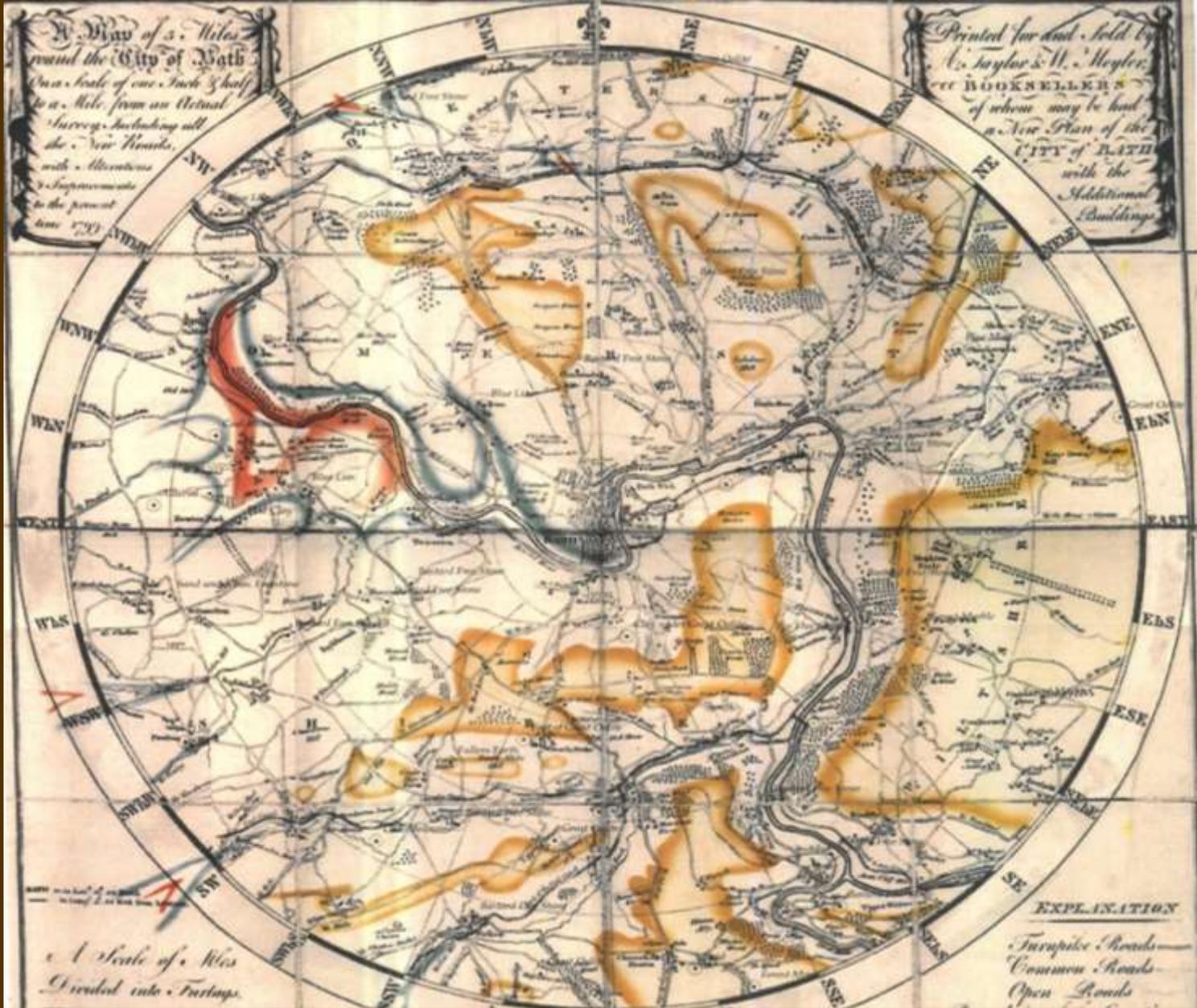


MAP showing nearly the DISPOSITION of the TRIANGLES, whereby it is proposed to determine the Relative Situations of the Royal Observatories of GREENWICH and PARIS.

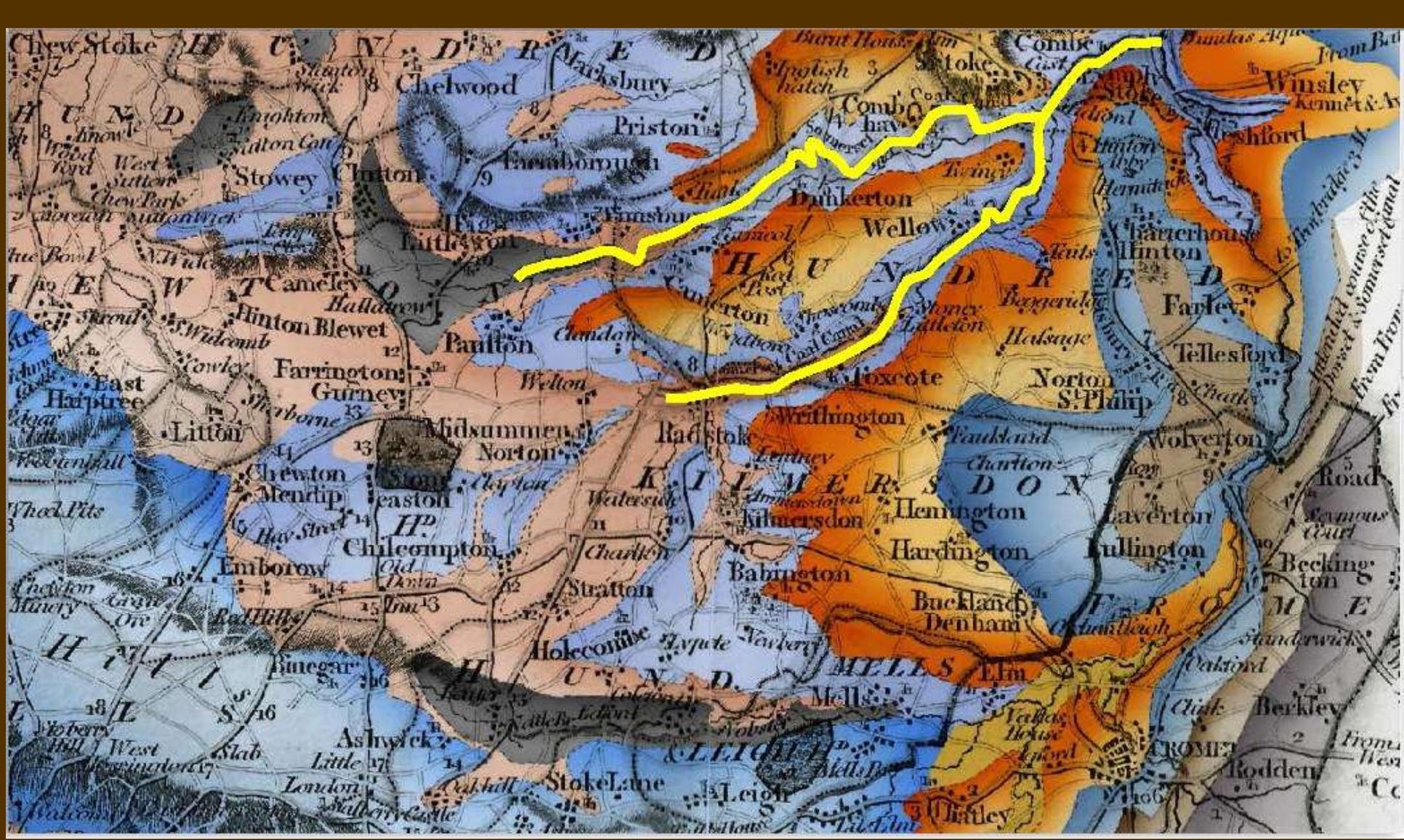
Philos. Trans. Vol. LXXXIII. Tab. VI. p. 101.







EARLY SMITH GEOLOGICAL MAP 1799

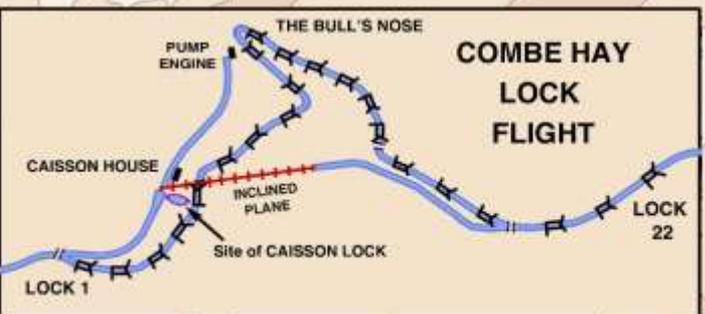
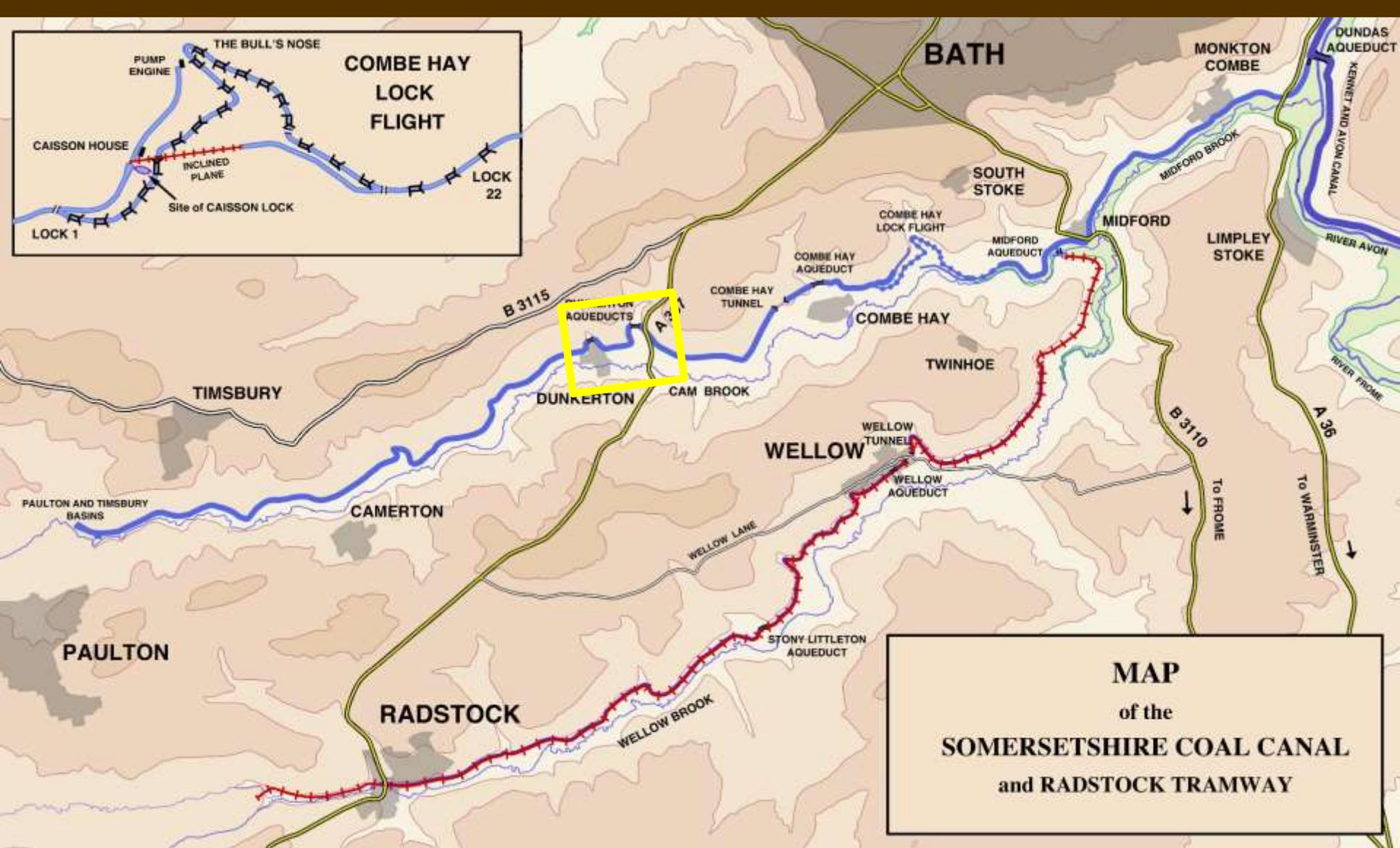


**JOHN RENNIE,
NOTABLE CANAL
ENGINEER WHO
ENGAGED SMITH
IN 1793 TO MAKE
SURVEYS FOR
THE SOMERSET
COAL CANAL TO
JOIN UP WITH
THE KENNET &
AVON CANAL.**

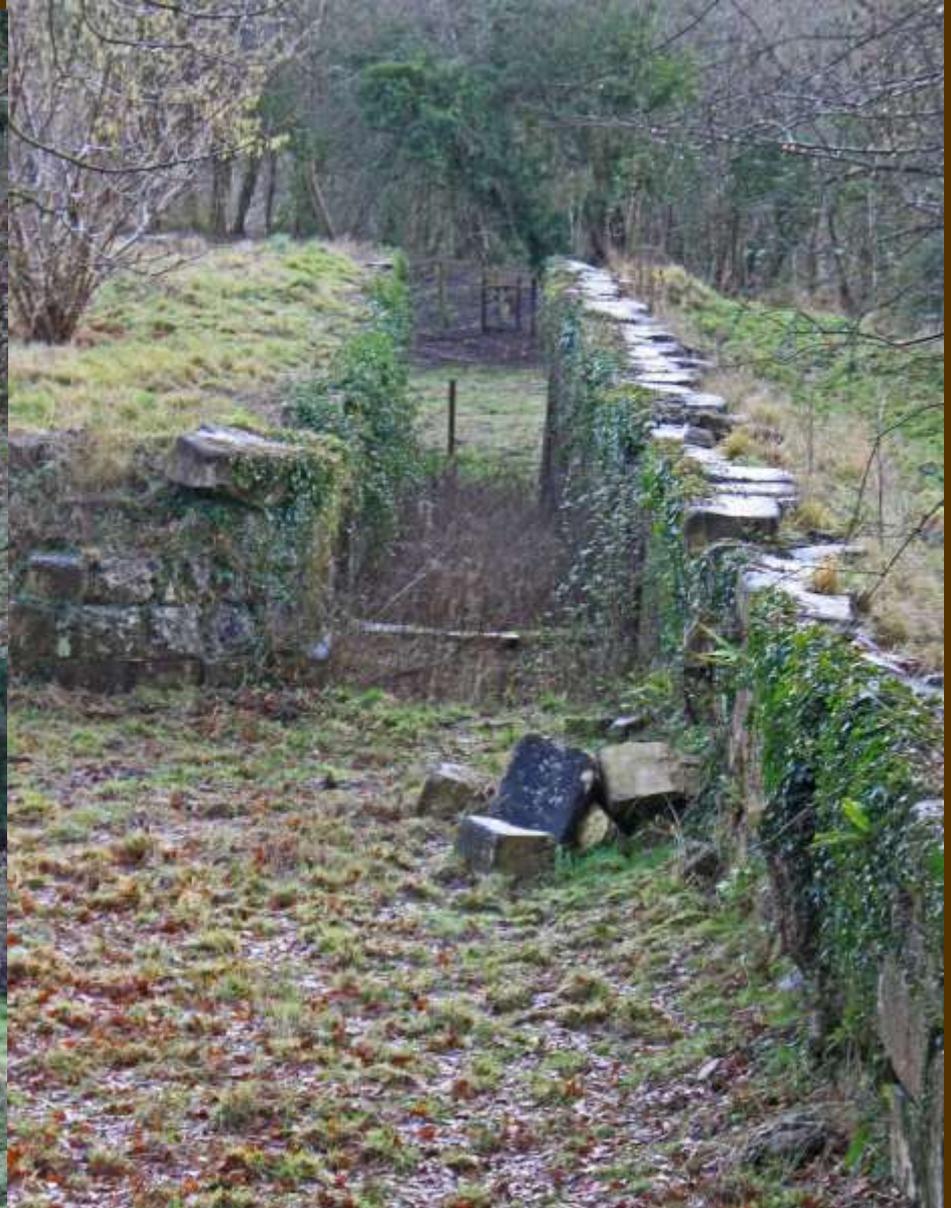




SURVEY PLAN OF SOMERSET COAL CANAL



MAP
of the
SOMERSETSHIRE COAL CANAL
and **RADSTOCK TRAMWAY**




**Somerset
Coal Canal**
- OPENED 1801 -
TO PAULTON 10 MILES
WITH BRANCH TO RADSTOCK
- CLOSED 1898 -
FIRST QUARTER MILE
RESTORED 1986-88
FOR MOORINGS AND
BOAT BASE.

**PRIVATE
GARDEN**
BOAT SKIPPERS
PLEASE STOP HERE AND PICK
UP CREW BEFORE PROCEEDING
THROUGH THE LOCK.



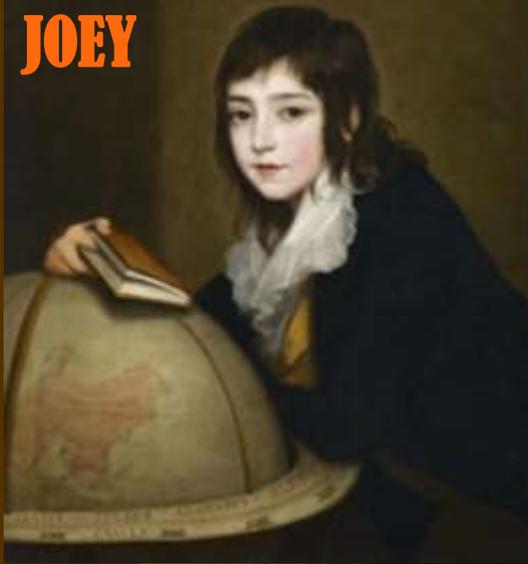
William 'Strata' Smith



The Map That
Changed The World

**SIR JOSEPH
BANKS,
PRESIDENT OF
THE ROYAL
SOCIETY &
BENEFACTOR OF
AUSTRALIAN
DISCOVERY ALSO
FIRMLY BACKED
“STRATA” SMITH
AND HIS FOSSIL
ID REVOLUTION!**

**LITTLE
JOEY**



A
DELINEATION
OF THE
S T R A T A
OF
ENGLAND AND WALES,
WITH PART OF
S C O T L A N D ;
EXHIBITING
THE COLLIERIES AND MINES.

THE MARSHES AND FEN LANDS *ORIGINALLY OVERFLOWED* BY THE SEA.

AND THE

VARIETIES OF SOIL

ACCORDING TO THE VARIATIONS IN THE SUBSTRATA.

ILLUSTRATED by the MOST DESCRIPTIVE NAMES

BY W. SMITH.

To the Right Hon^{ble} Sir Joseph Banks Bart. &c.

This MAP is by Permission most respectfully dedicated,

by his much obliged Servant,
W. Smith

Aug^r 1. 1815.

A
MEMOIR
TO THE
MAP AND DELINEATION
OF THE
STRATA
OF
ENGLAND AND WALES,
WITH PART OF
SCOTLAND.

BY
WILLIAM SMITH,
ENGINEER AND MINERAL SURVEYOR.

LONDON:
PRINTED FOR JOHN CARY, NO. 181, STRAND.
1815.

RECONSTRUCTION
OF THE
STRATA
OF
ENGLAND AND WALES,
AND OF
SCOTLAND,
FROM THE
COLLECTED DATA
IN POSSESSION OF THE
SURVEY OF GREAT BRITAIN

1830

*The Colours of the Strata
are the same as in the
Geological Map of Great Britain
published in 1830*

THE
GERMAN
OCEAN

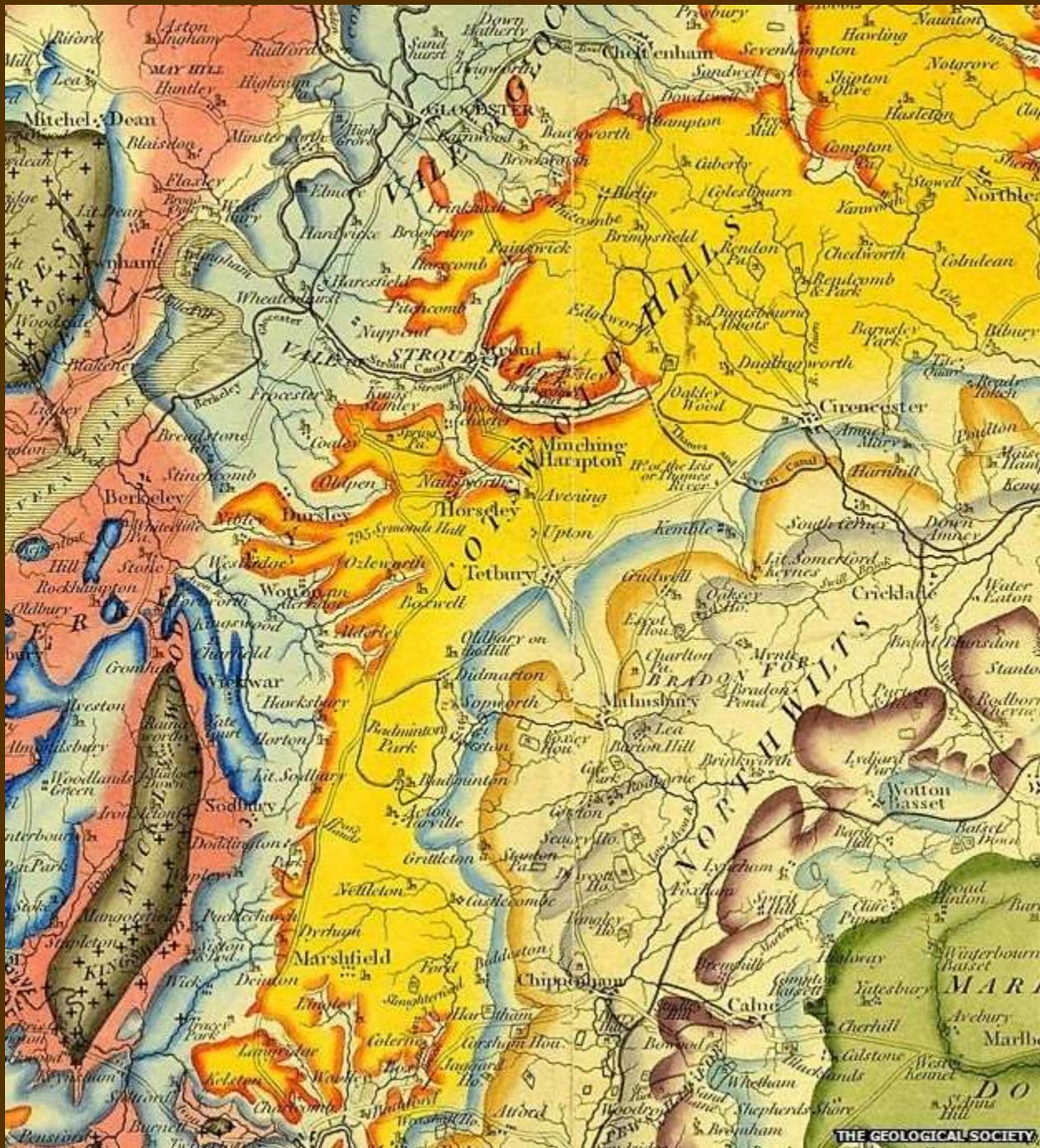
IRISH SEA

BRITISH CHANNEL

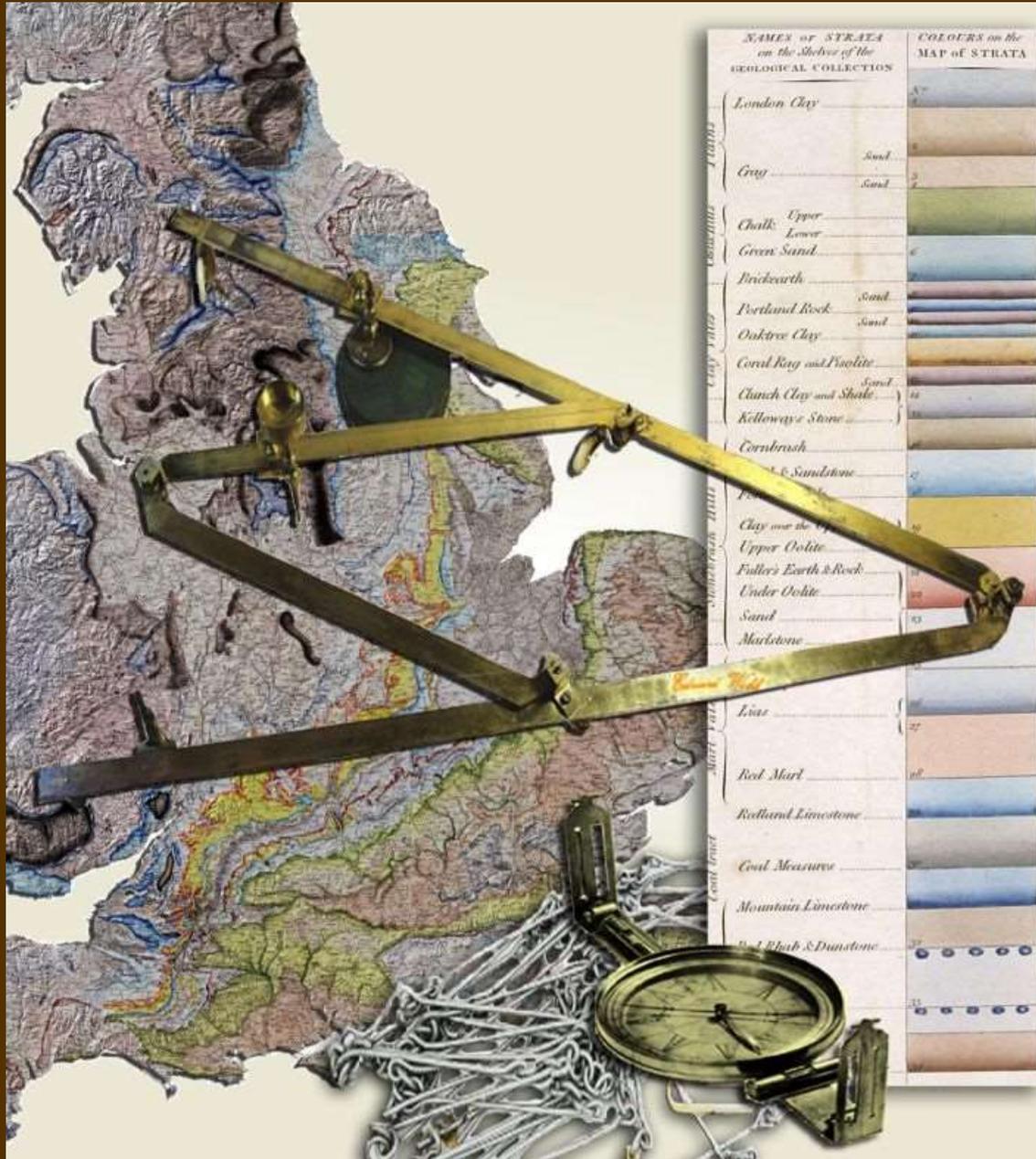
THE
ENGLISH CHANNEL











**A
DELINEATION
OF THE
STRATA
OF
ENGLAND AND WALES
WITH PART OF
SCOTLAND
“THE MAP THAT MIGHT HAVE BEEN”
WILLIAM SMITH**

*A COMPILATION OF WILLIAM SMITH'S
GEOLOGICAL ATLASES OF ENGLISH COUNTIES
(INCLUDING THE UNFINISHED COUNTIES OF
CAMBRIDGESHIRE, CHESHIRE, DERBYSHIRE, HAMPSHIRE, HEREFORDSHIRE,
LINCOLNSHIRE, MONMOUTHSHIRE, NORTHAMTONSHIRE,
SOMERSETSHIRE AND STAFFORDSHIRE)
THE GEOLOGY OF WALES & PARTS OF SCOTLAND AND OTHER UNFINISHED
ENGLISH COUNTIES DERIVED FROM SMITH'S 1815 MAP
WILLIAM SMITH MAPS COURTESY OF THE GEOLOGICAL SOCIETY,
THE OXFORD UNIVERSITY MUSEUM OF NATURAL HISTORY AND
THE UNIVERSITY OF NOTTINGHAM*

Peter Wigley (Compiler)

Peter Dolan, John Henry, Tom Sharpe, Hugh Torrens, Dave Williams

William Smith 1769-1839



- ▶ Age of canal building - Smith was a canal engineer.
- ▶ Smith discovered that different rock formations contain distinct fossil assemblages and that even isolated areas of rocks could be identified in their sequence by the fossils they contained.
- ▶ Made a map of England published in 1814-1815
- ▶ Strata identified by organized fossils 1816-1819



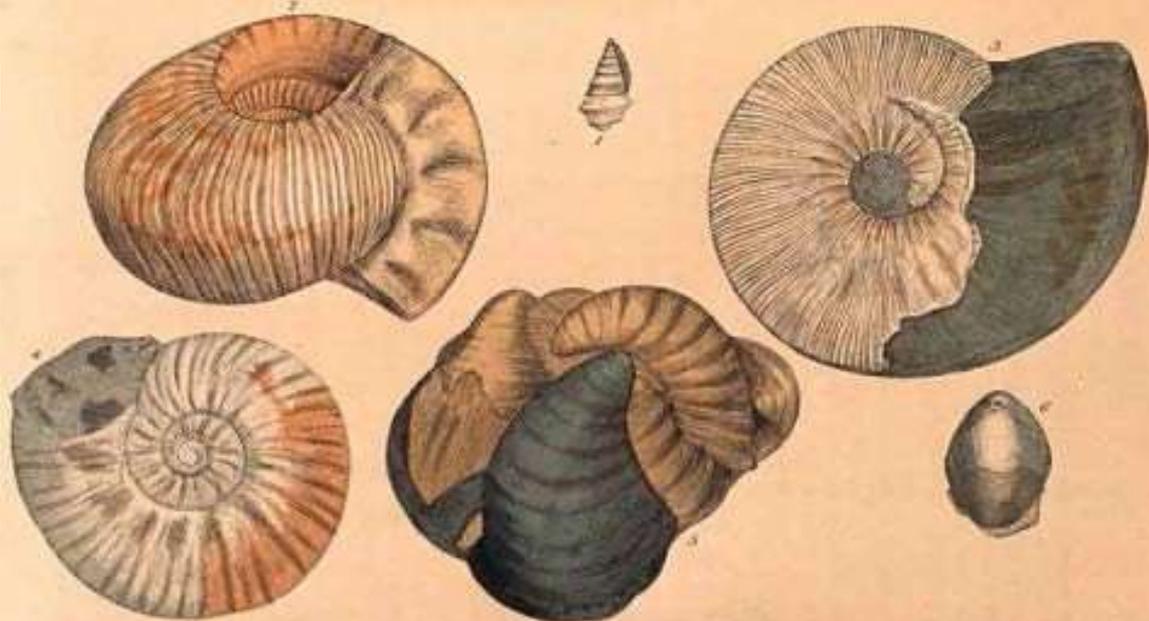
CLAY from the UPPER GULF.

GREEN SAND.

LOWER CHALK.

OAK-TREE CLAY.

KILLOWATS STONE.



- Fig 1. Miliolites
- 2 Turbellaria
- 3 Trochus
- 4 Ampullites

Fig 1. *Ammonites*

- 1. *Ammonites sublaevus* M. S. P. 1831.
- 2. *A. Gallowayensis* M. S. P. 1831.

Fig 2. *Ammonites*

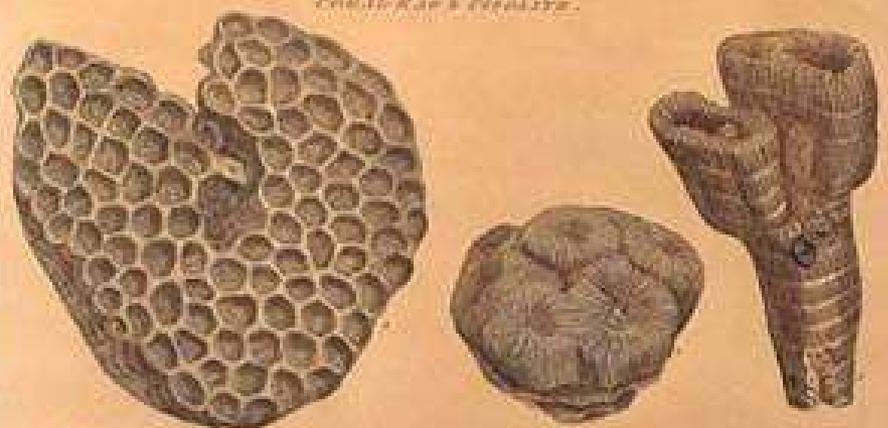
- 1. *Cyprina castra* M. S. P. 1831.
- 2. *Turbostrata ornithocephala* M. S. P. 1831.

NAMES of STRATA
on the Shelves of the
GEOLOGICAL COLLECTION

COLOURS on the
MAP of STRATA

<i>London Clay</i>		1
	<i>Sand</i>	2
<i>Crug</i>		3
	<i>Sand</i>	4
<i>Chalk</i> <i>Upper</i>		5
<i>Chalk</i> <i>Lower</i>		6
<i>Green Sand</i>		7
<i>Brickearth</i>		8
	<i>Sand</i>	9
<i>Portland Rock</i>		10
	<i>Sand</i>	11
<i>Oaktree Clay</i>		12
<i>Coral Rag and Pisolite</i>		13
	<i>Sand</i>	14
<i>Clunch Clay and Shale</i>		15
<i>Kelloway's Stone</i>		16

CORAL RAG & PISOLITE.



Madrepora

Coral Rag and Pisolite

No. 1. Madrepora.
2. Coral Rag.
3. Pisolite.

LOWER CHALK.



Shark teeth

- 1. *Ammonites* (various species)
- 2. *Ammonites*
- 3. *Ammonites*
- 4. *Ammonites*
- 5. *Ammonites*
- 6. *Ammonites*
- 7. *Ammonites*
- 8. *Ammonites*
- 9. *Ammonites*
- 10. *Ammonites*
- 11. *Ammonites*
- 12. *Ammonites*
- 13. *Ammonites*
- 14. *Ammonites*
- 15. *Ammonites*
- 16. *Ammonites*
- 17. *Ammonites*
- 18. *Ammonites*
- 19. *Ammonites*
- 20. *Ammonites*

Lower Chalk

GEOLOGICAL TABLE

NAMES OF STRATA
on the Shelves of the
GEOLOGICAL COLLECTION

COLOURS on the
MAP of STRATA

Brickearth 7

Portland Rock } *Sand* 8

Oaktree Clay 11

Coral Rag and Pisolite 12

Clunch Clay and Shale } *Sand* 14

Kelloways Stone 15

Cornbrash 16

Sand & Sandstone 17

Forest Marble 18

Clay over the Upper Oolite 19

Upper Oolite } 20

Fuller's Earth & Rock } 21

Under Oolite } 22

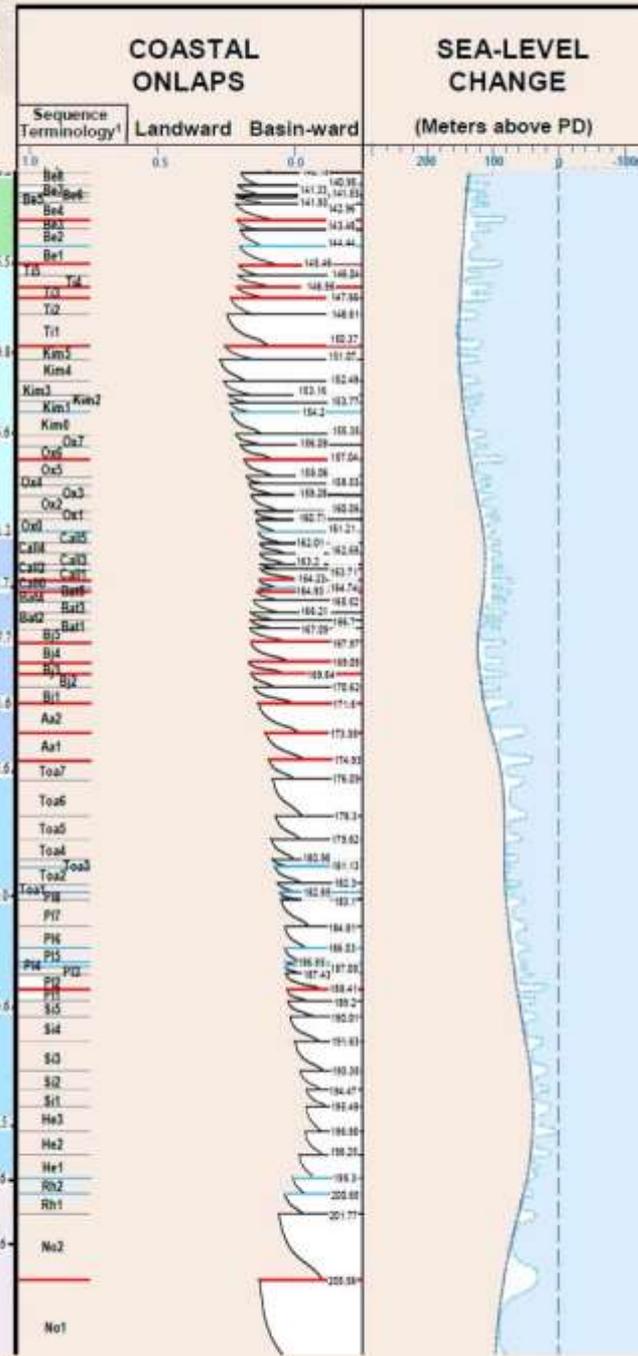
Sand 23

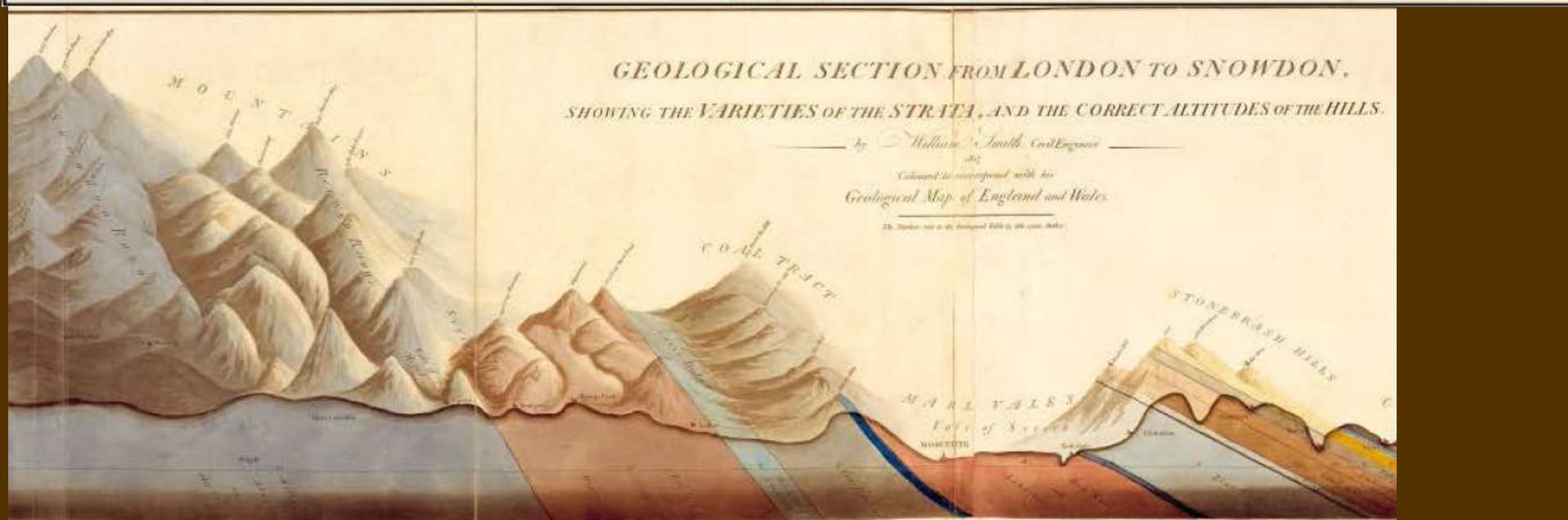
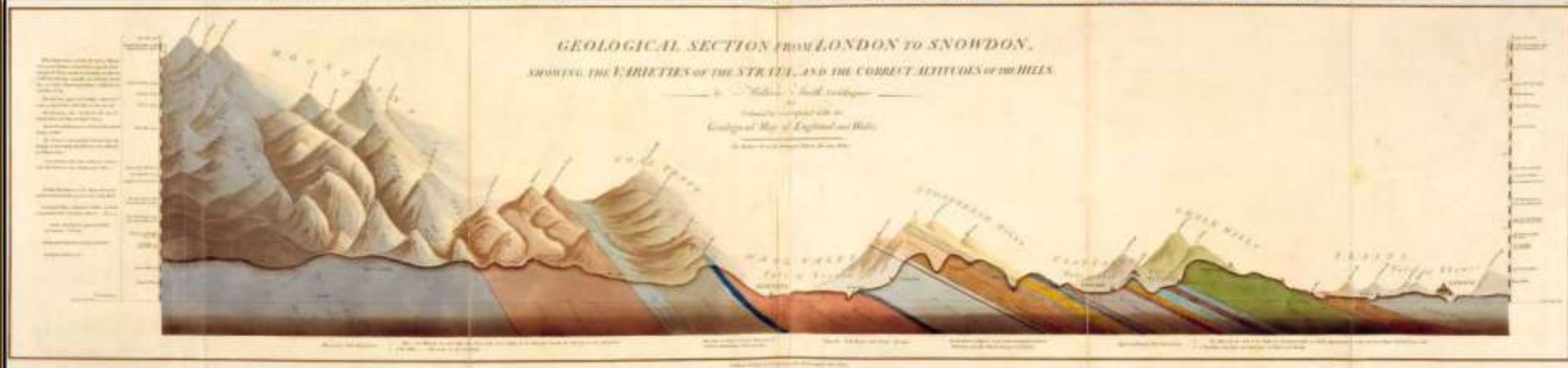
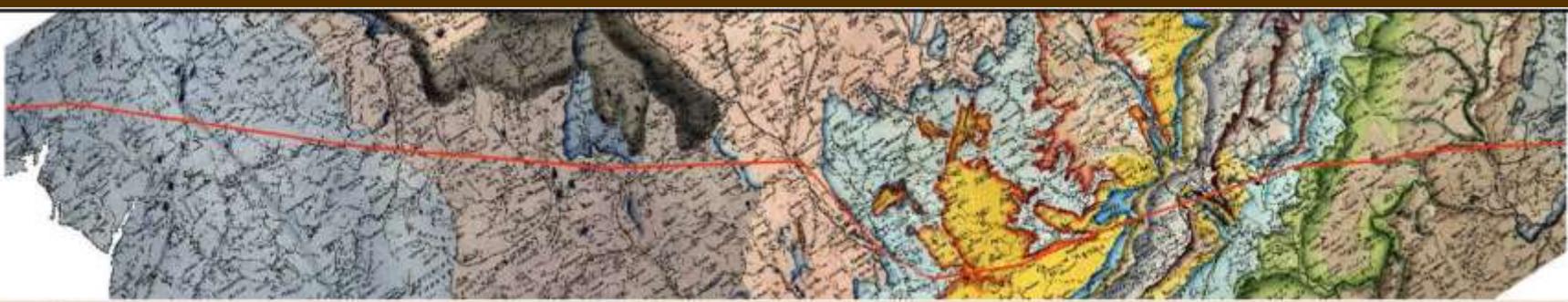
Marlstone 24

Blue Marl 25

Lias } 26

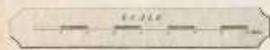
Red Marl 28





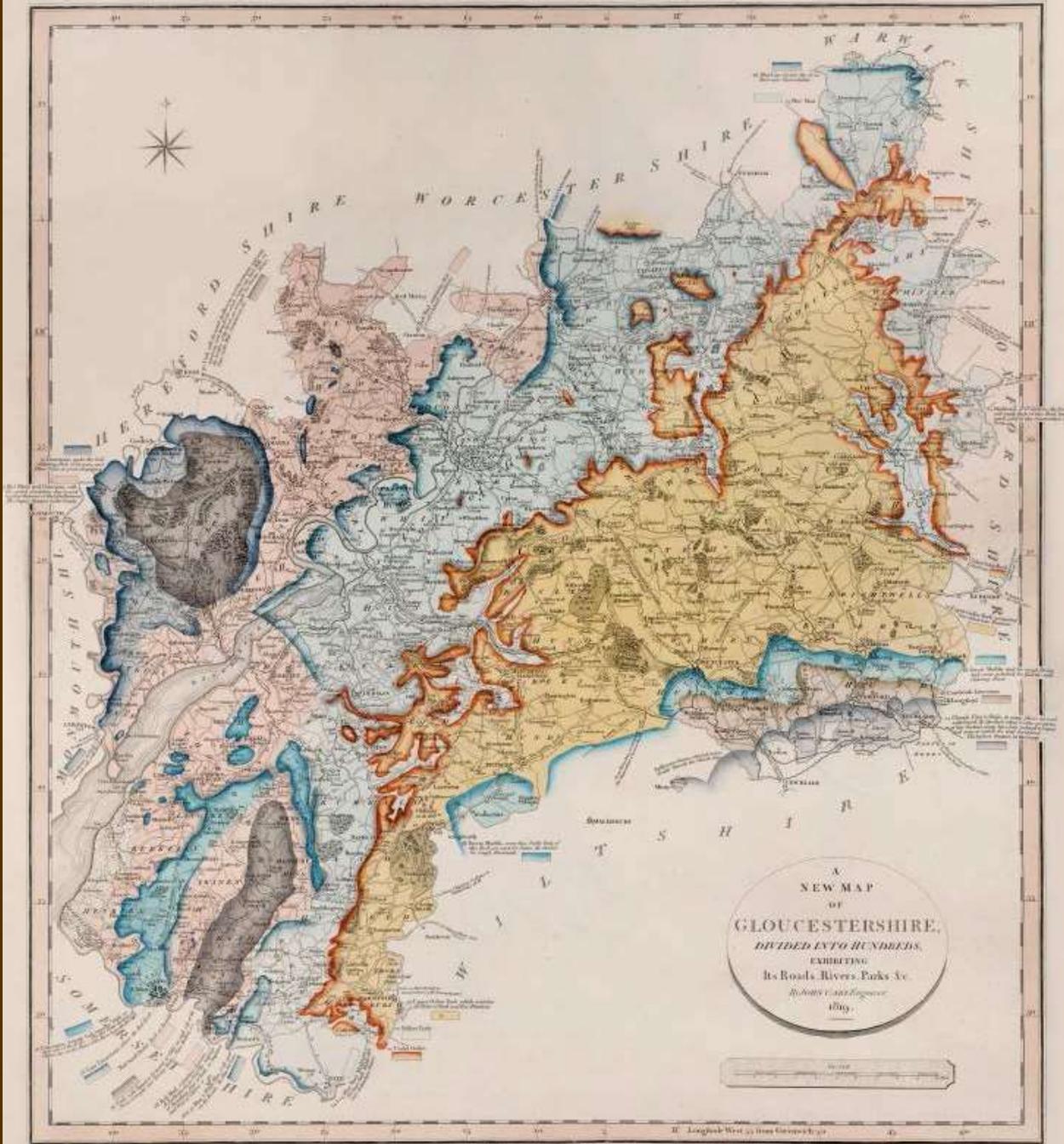


NEW MAP OF
BUCKINGHAMSHIRE,
 DIVIDED INTO HUNDREDS,
 EXHIBITING
 ITS ROADS, RIVERS, PARKS &c.
 &c. BY W. SMITH, Mineral Surveyor.



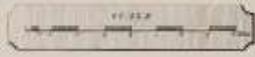
See the Remarks prefixed to the Description of each Stratum, and to the Geological Table, for a full and particular Account of the Strata, &c. &c.
 - B. Smith's Geological System of British Rocks, and his plan to proceed through the Kingdom, and the adjacent parts of France, &c. &c. in order to ascertain the true nature of the British Strata, &c. &c. (see his Travels, &c. &c.)

Handwritten notes:
 The fault of the...
 with a...
 Basin of...
 of...
 of...
 of...



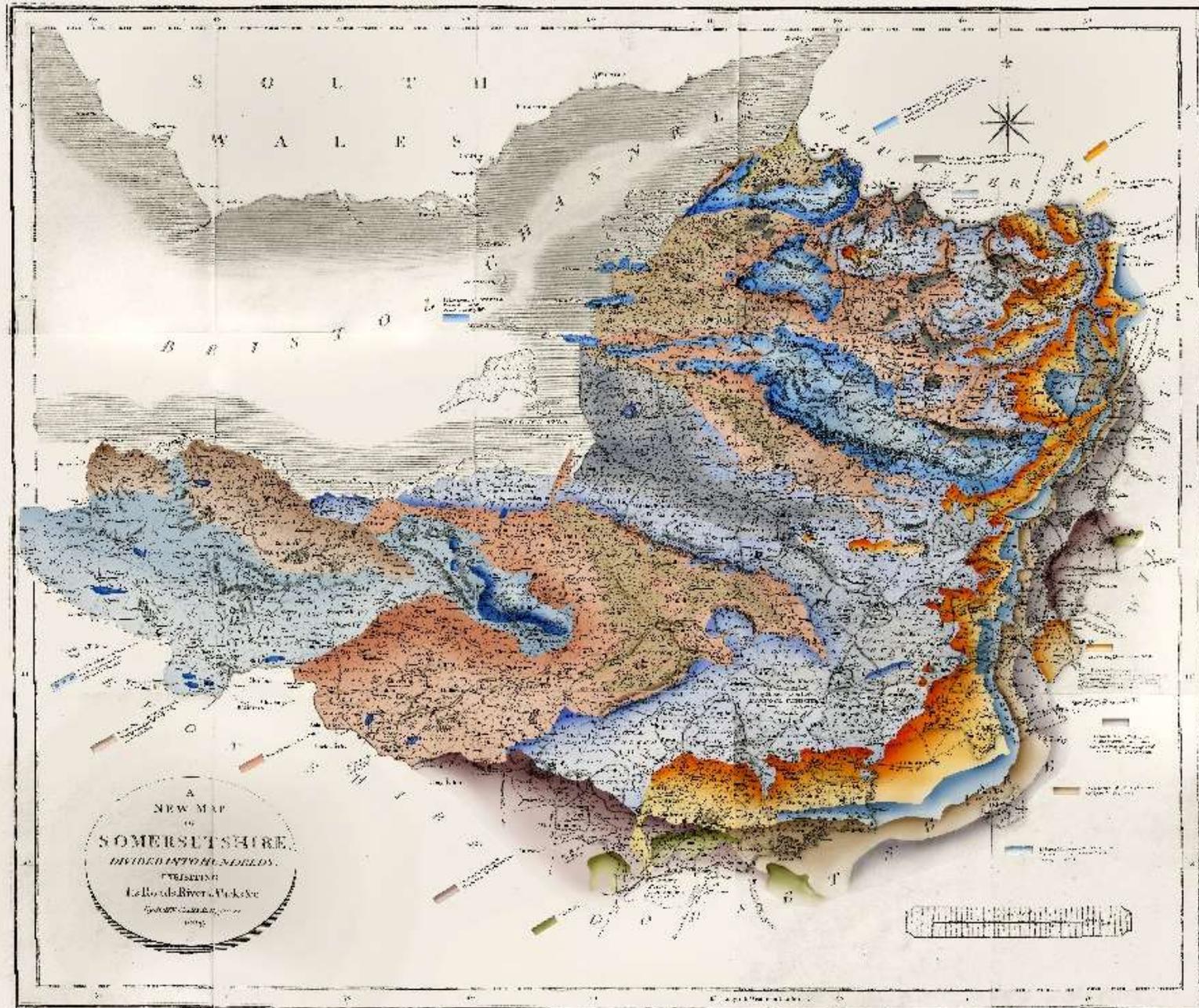


A
NEW MAP
OF
OXFORDSHIRE.
DIVIDED INTO HUNDREDS.
EXHIBITING
ITS BOUNDS, RIVERS, PARKS, &c.
by W. SMITH, Mineral Surveyor.
1830.

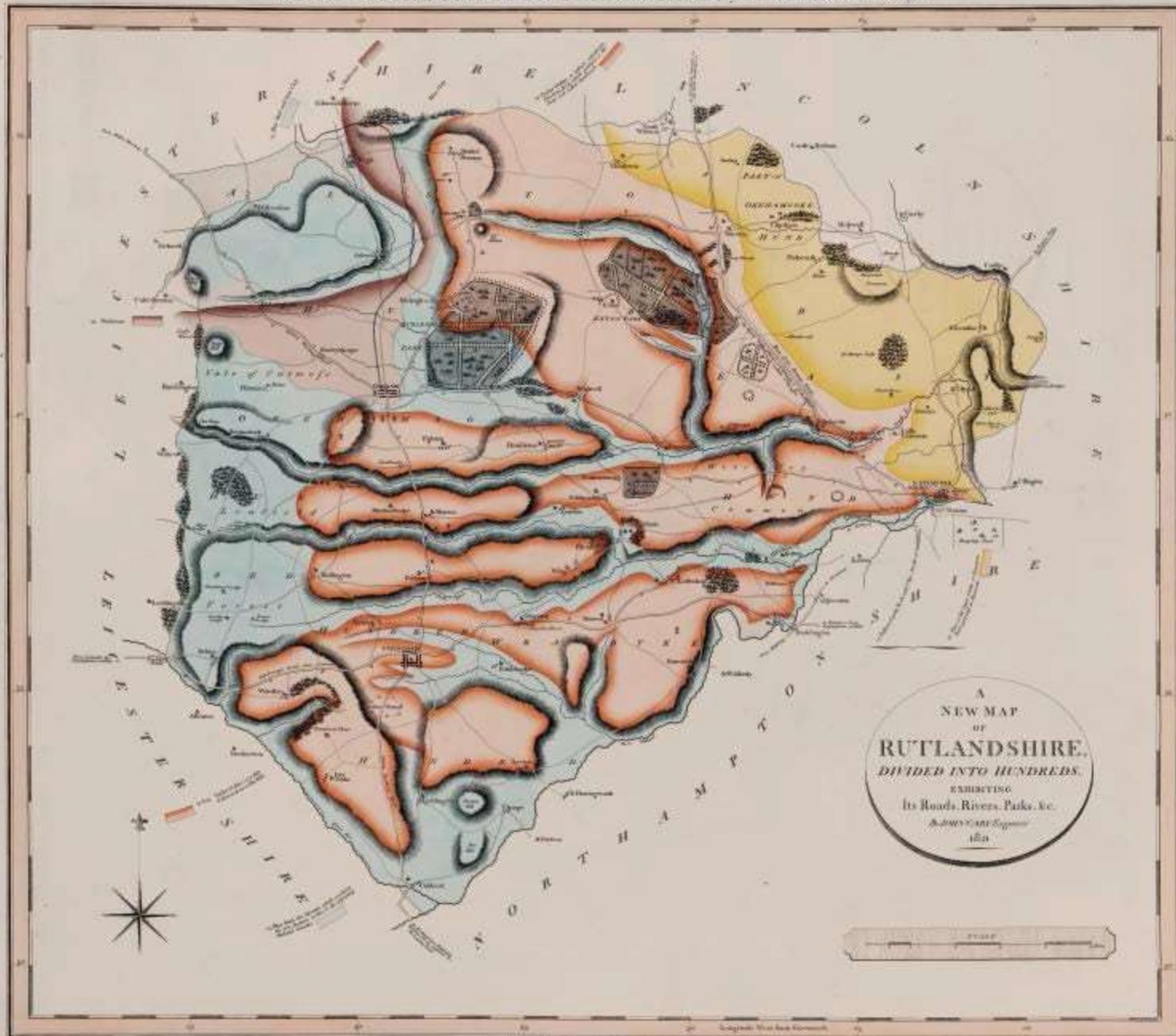


Printed by W. Smith, Mineral Surveyor, at the Office of the Mineral Survey, in the Strand, London.

GEOLOGICAL MAP OF SOMERSETSHIRE. by W. Smith, Mineral Surveyor



GEOLOGICAL MAP OF RUTLANDSHIRE, by W. SMITH, Mineral Surveyor.



A
NEW MAP
OF
SUSSEX,
DIVIDED INTO HUNDREDS,
EXHIBITING
Its Roads Rivers Parks &c
As they appear in 1825



T H E E N G L I S H C H A N N E L

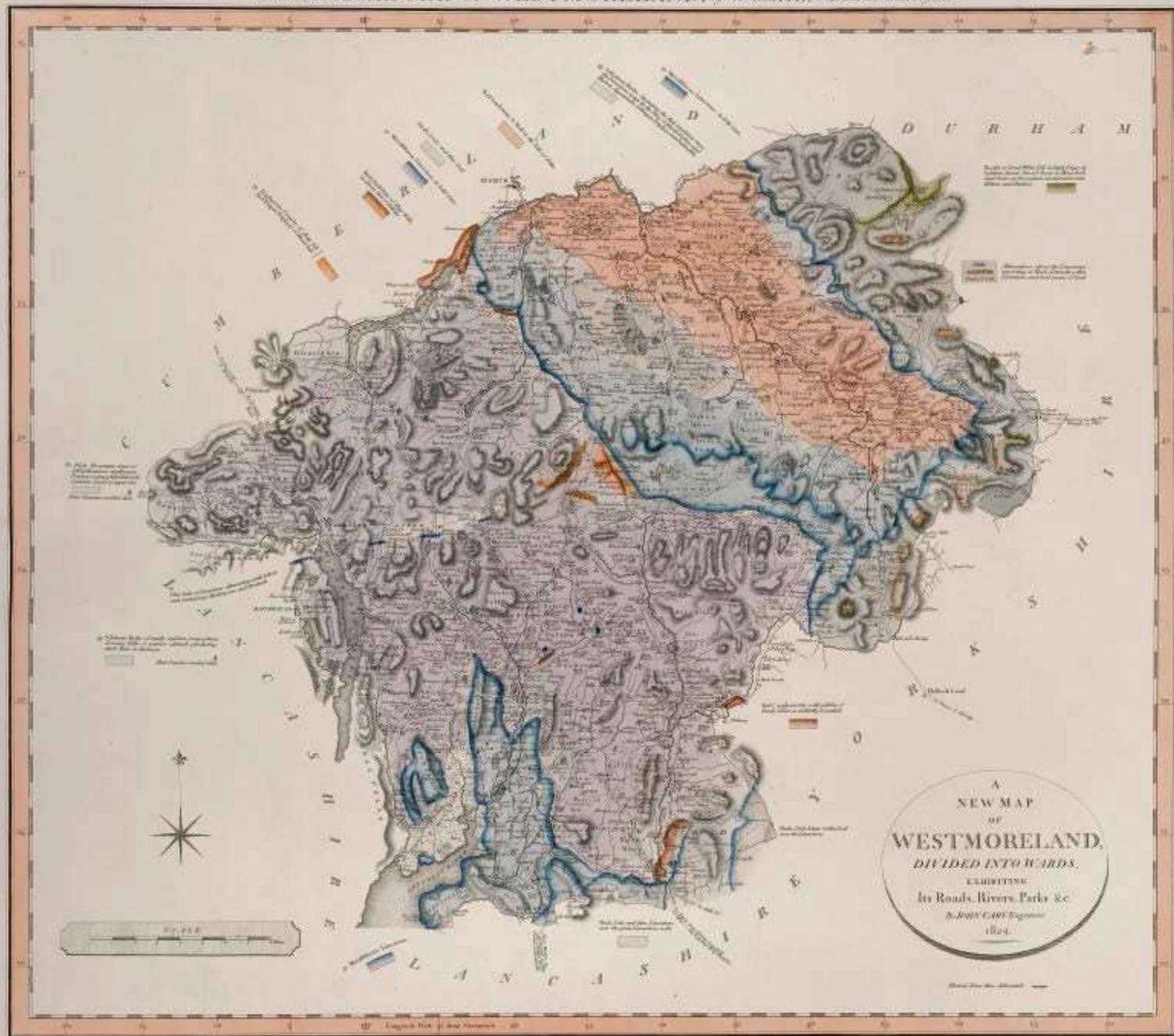
REFERENCE to the HUNDREDS

1. Ditchling	16. Tarring	31. Burgess	46. Bokerlyoke
2. Buncton	17. E. Hoar	32. Bovey	47. Buncton
3. Wicheham/Wiggon	18. R. Hoar	33. Bovey	48. Buncton
4. Buncton	19. S. Hoar	34. Bovey	49. Buncton
5. Buncton	20. S. Hoar	35. Bovey	50. Buncton
6. Buncton	21. S. Hoar	36. Bovey	51. Buncton
7. Buncton	22. S. Hoar	37. Bovey	52. Buncton
8. Buncton	23. S. Hoar	38. Bovey	53. Buncton
9. Buncton	24. S. Hoar	39. Bovey	54. Buncton
10. Buncton	25. S. Hoar	40. Bovey	55. Buncton
11. Buncton	26. S. Hoar	41. Bovey	56. Buncton
12. Buncton	27. S. Hoar	42. Bovey	57. Buncton
13. Buncton	28. S. Hoar	43. Bovey	58. Buncton
14. Buncton	29. S. Hoar	44. Bovey	59. Buncton
15. Buncton	30. S. Hoar	45. Bovey	60. Buncton

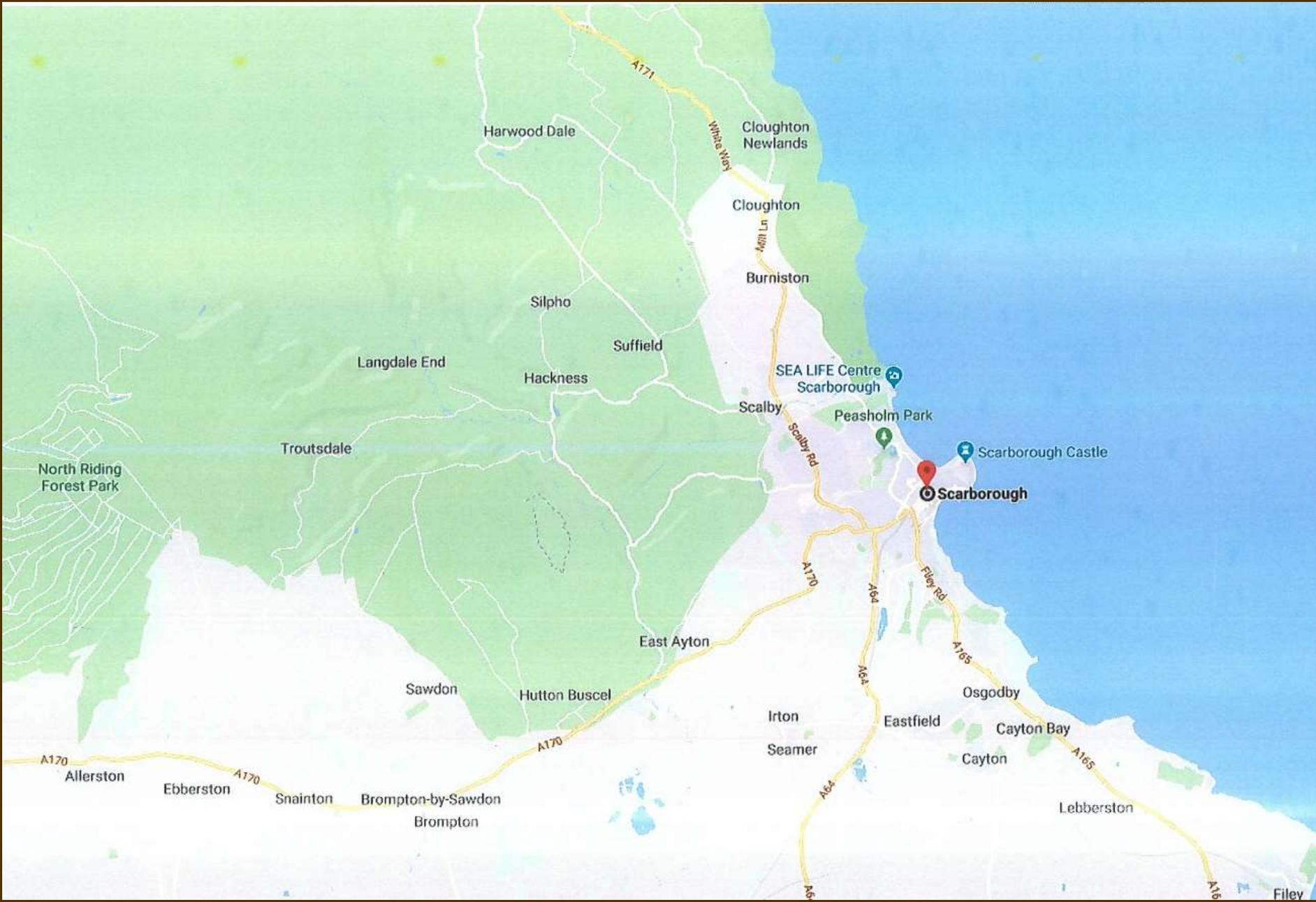
Map. The map was prepared in the workshop of the late Mr. W. Smith, at the late Mr. W. Smith's office, at the late Mr. W. Smith's office, at the late Mr. W. Smith's office.

Published by W. Smith, Mineral Surveyor, at the late Mr. W. Smith's office.

Printed by W. Smith, Mineral Surveyor, at the late Mr. W. Smith's office.



London: Published by W. Smith, at the Mineral Surveyors Office, in Pall Mall, 1824.
Note. The names of the several mineral basins, and of the principal hills, are given in the margin of the map.



North Riding Forest Park

Allerston

Ebberston

Snainton

Brompton-by-Sawdon
Brompton

Sawdon

Hutton Buscel

East Ayton

Troutdale

Langdale End

Hackness

Silpho

Suffield

Harwood Dale

Cloughton Newlands

Cloughton

Burniston

Scalby

A170

A166

A164

A170

A164

A166

Eastfield

Irton

Seamer

Filey Rd

A165

Osgodby

Cayton Bay

Cayton

A165

Lebberston

A165

Filey

Scarborough

Scarborough Castle

SEA LIFE Centre Scarborough

Peasholm Park

White Way

Mill Ln

Scalby Rd

HACKNESS HILLS 1832

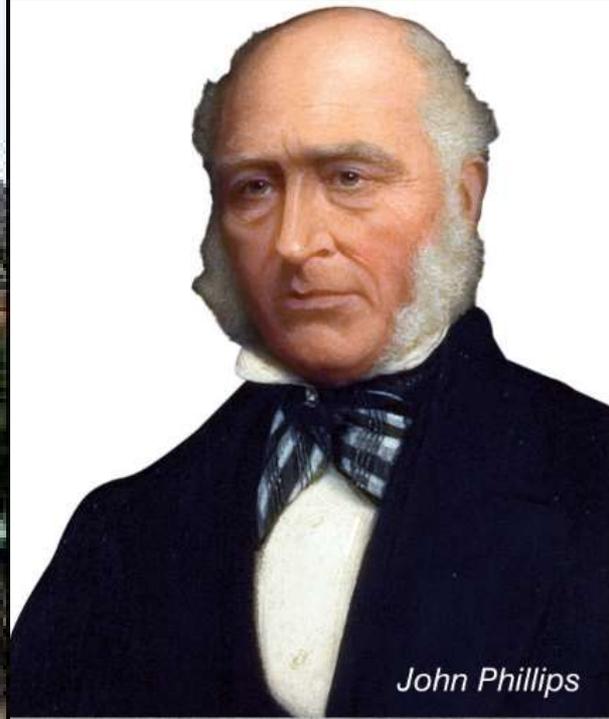


VERTICAL SECTION OF THE STRATA





HACKNESS HALL



SCARBOROUGH CITY MUSEUM IN WHICH SMITH EXHIBITED FOSSILS FROM THE YOUNGEST AT THE TOP TO THE OLDEST ON THE LOWEST FLOOR



Isle of Man

Scarborough

3 h 26 min
188 miles

3 h 23 min
175 miles

Manchester

Sheffield

Birmingham

Northampton



**WILLIAM SMITH DIED AT NORTHAMPTON
ON AUGUST 28, 1839 & HIS GRAVE IS AT
ST. PETERS CHURCHYARD, MARE FAIR**



**15 BUCKINGHAM STREET,
LONDON**



CITY OF WESTMINSTER
**WILLIAM
SMITH**
1769-1839
"FATHER OF ENGLISH GEOLOGY"
MADE THE FIRST GEOLOGICAL
MAP OF AN ENTIRE COUNTRY
- ENGLAND AND WALES -
IN 1815
LIVED ON THIS SITE
1804-1819
THE GEOLOGICAL SOCIETY OF LONDON 2015



**SIMON WINCHESTER NEXT
TO THE RARE PRINT OF SMITH'S
1815 MAP AT ANU, CANBERRA**

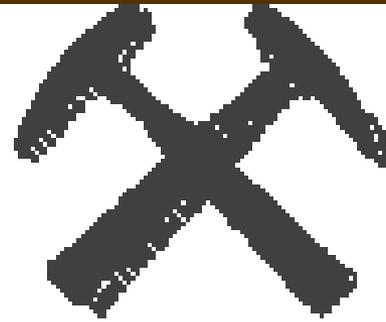


JAMES HUTTON AND WILLIAM SMITH

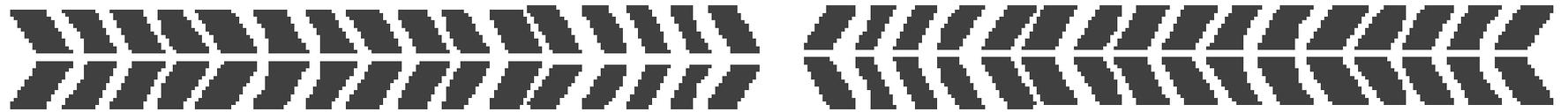


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CHATTANOOGA, TENN.



**THANK YOU
"STRATA"
SMITH
FOR
CHANGING
OUR
WORLD!**

