

MAPPING MONUMENTS

A landscape archaeology of the
Ordnance Survey

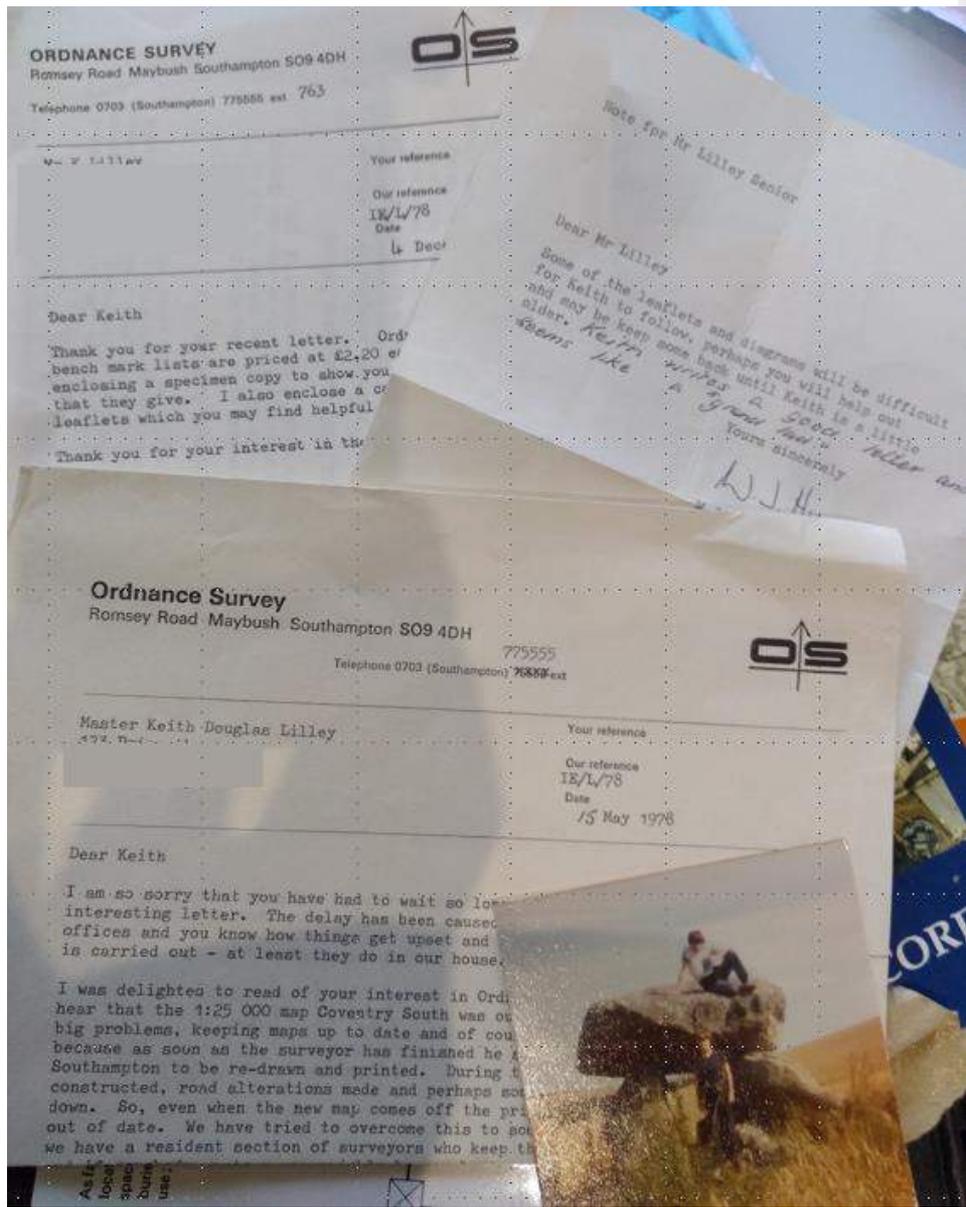
Keith D Lilley

Queen's University Belfast



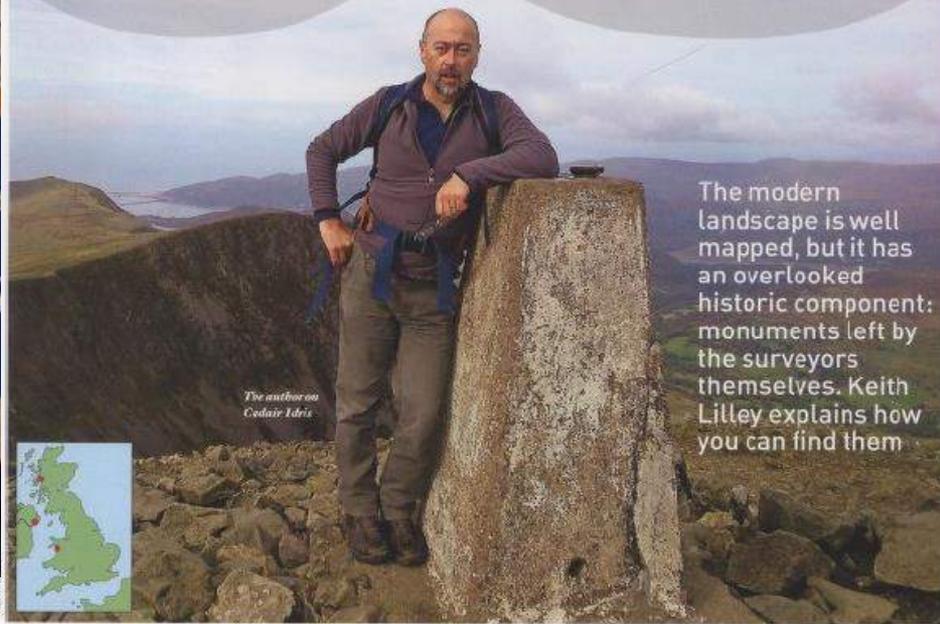
Archaeology for Communities
in the Highlands





A life in maps...!

Surveying the surveyors: the landscape legacies of the Ordnance Survey



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Data Catalogue

Base Information and Mapping

- GeoHive Map ⓘ
- Aerial latest ⓘ
- Aerial 2005 ⓘ
- Aerial 2000 ⓘ
- Aerial 1995 ⓘ
- Digital Globe ⓘ
- Historic Map 25 inch (1888-1913) ⓘ

Selection

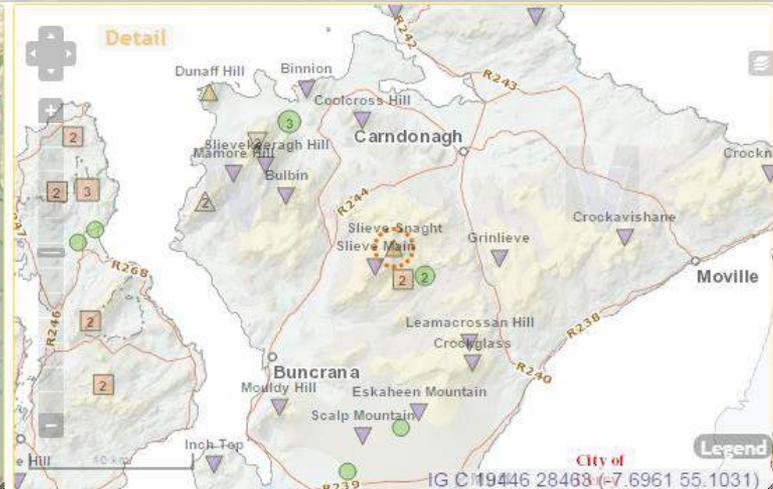
Digital Globe ⓘ

Transparency

Close Menu



Slieve Snacht
Inishowen
Co. Donegal



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Digital Globe ⓘ

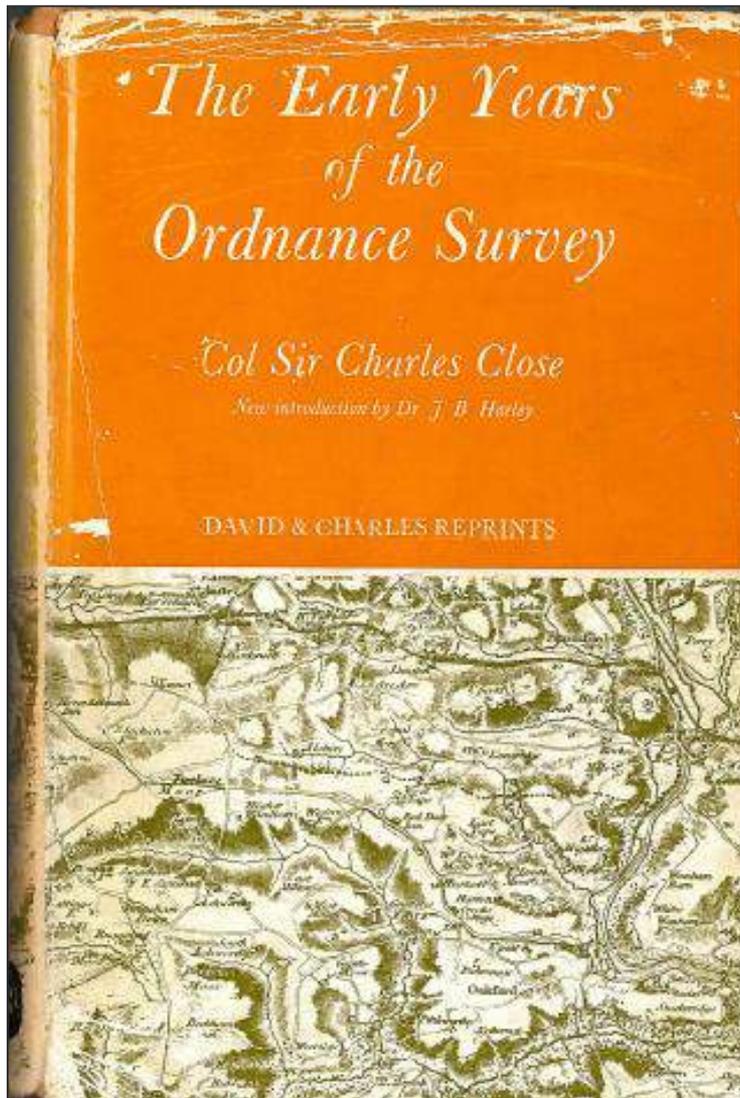
Transparency

Close Menu

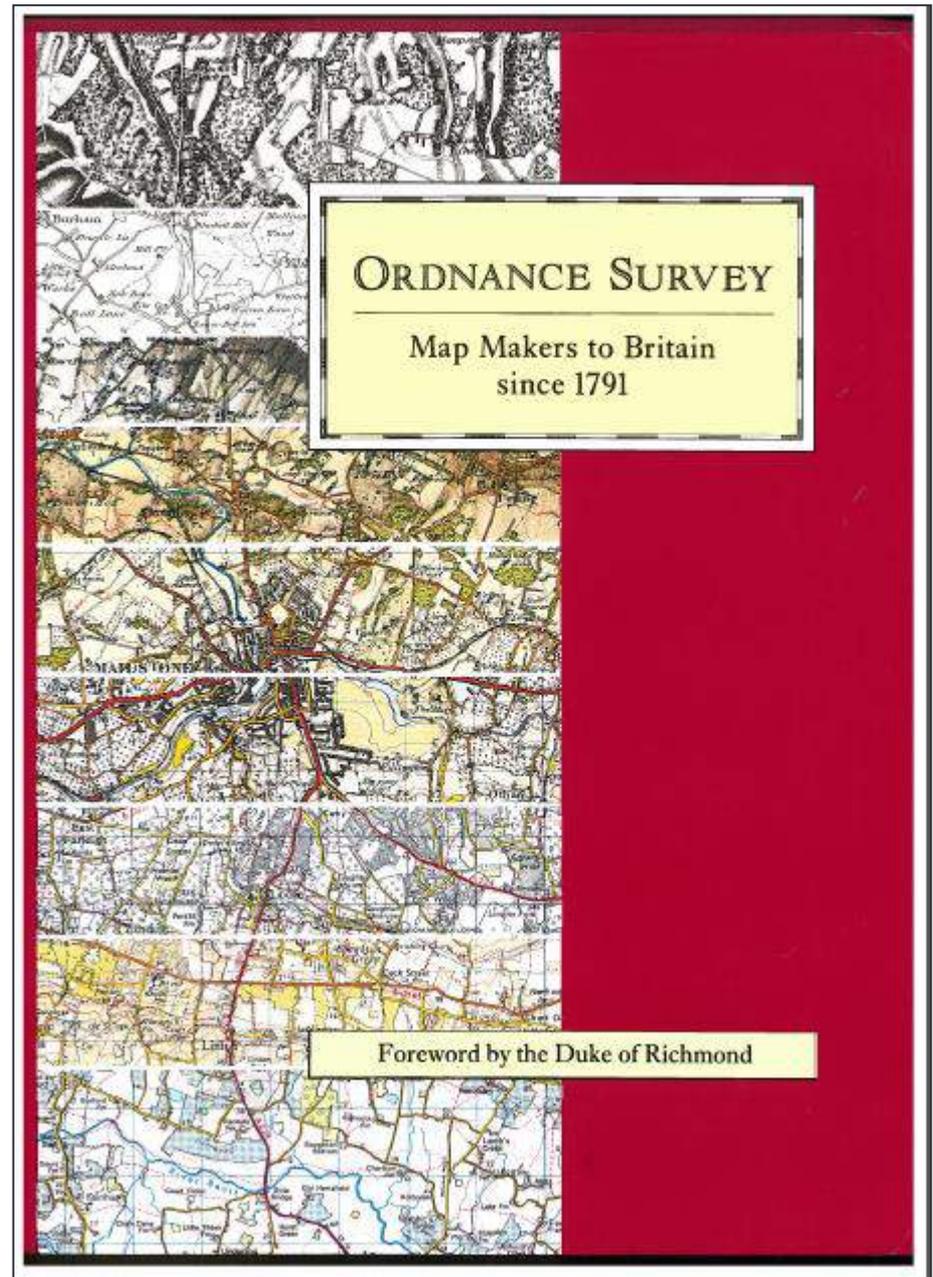


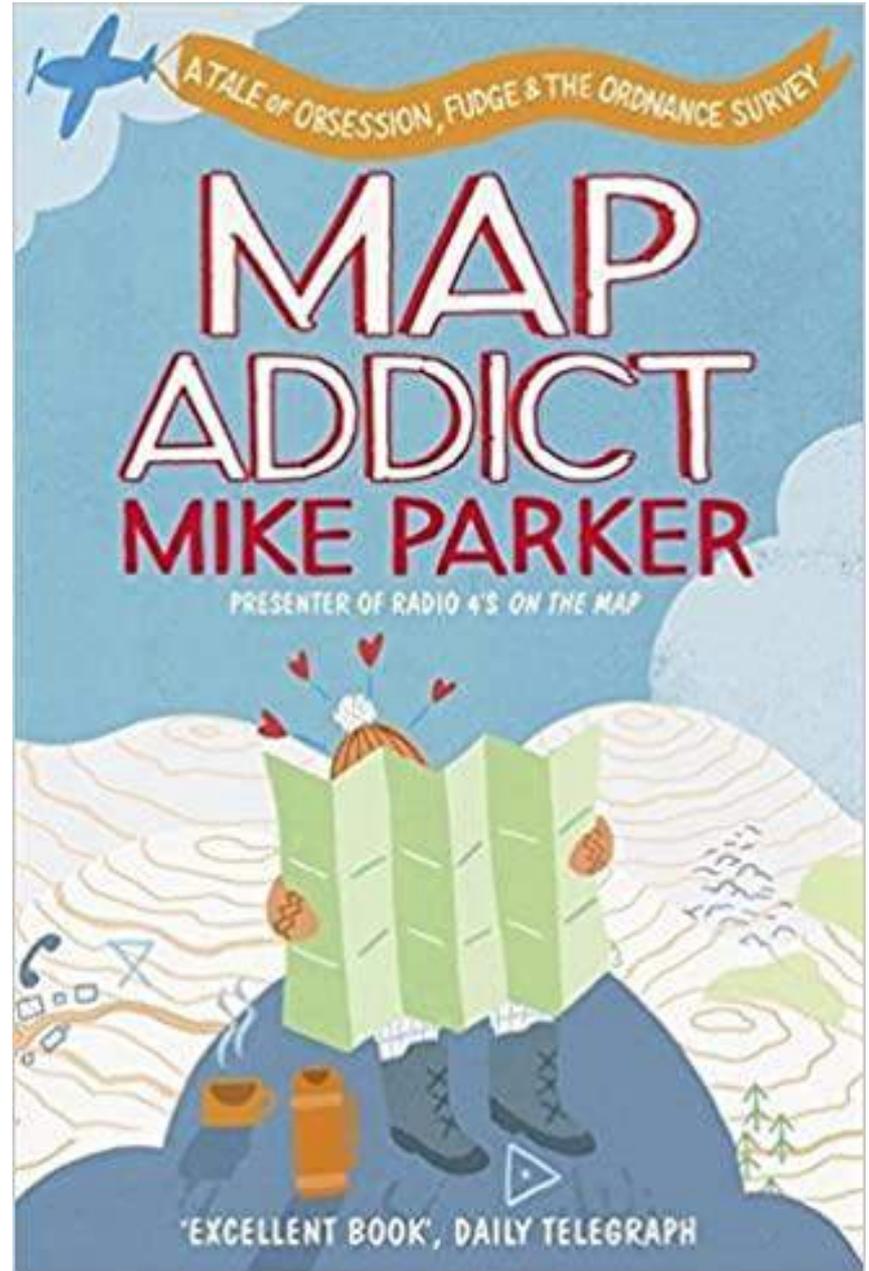
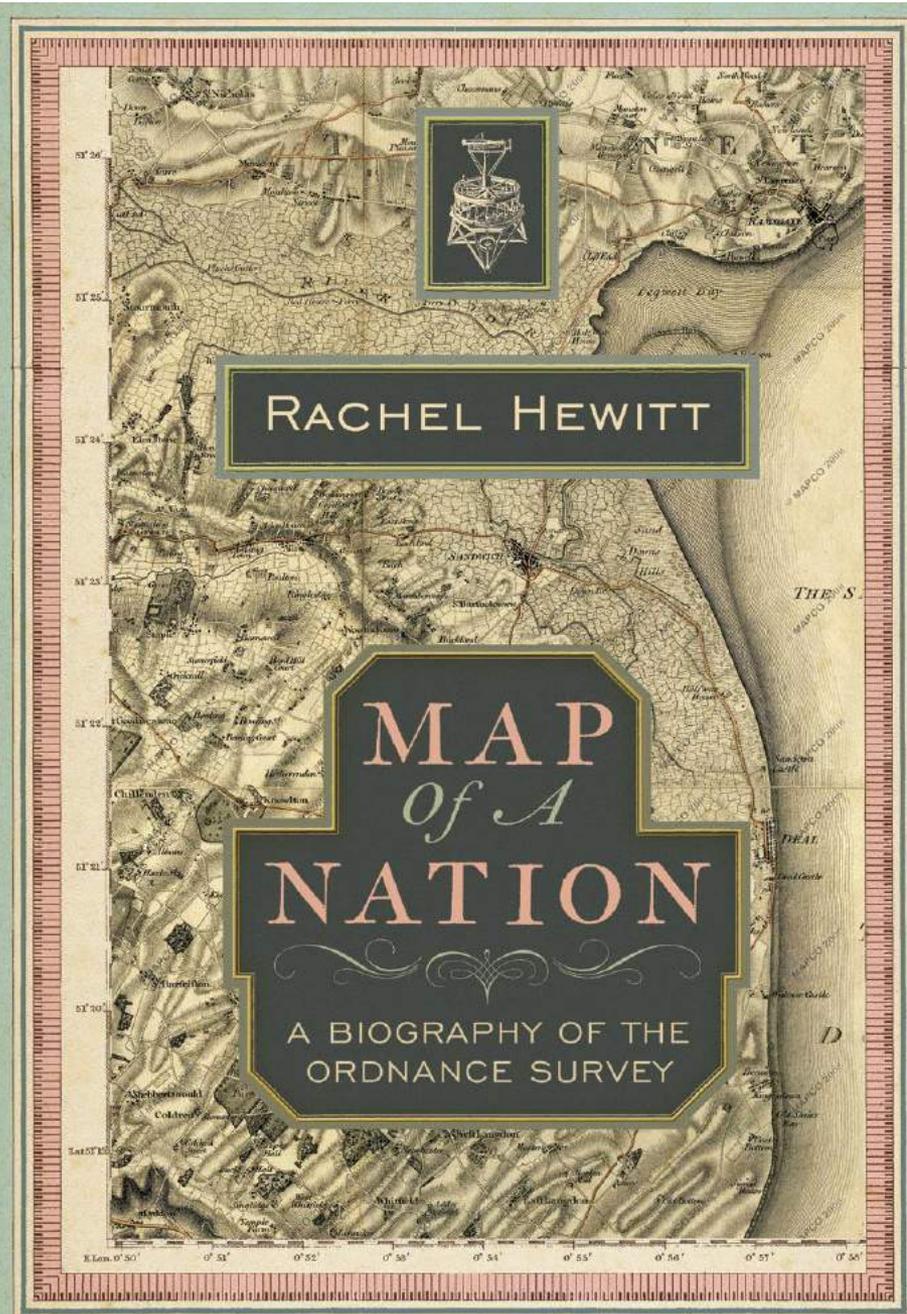
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- The early Ordnance Survey in Scotland and Ireland
- Behind the map—an ‘archaeology’ of the Ordnance Survey?
 - Material cultures I. Instruments in the field
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- Landscapes of survey—field-evidence of the early OS:
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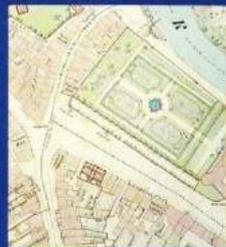


'National' histories of the nation's / nations' mapping agency?





ORDNANCE SURVEY IN IRELAND



AN ILLUSTRATED RECORD



A Paper Landscape

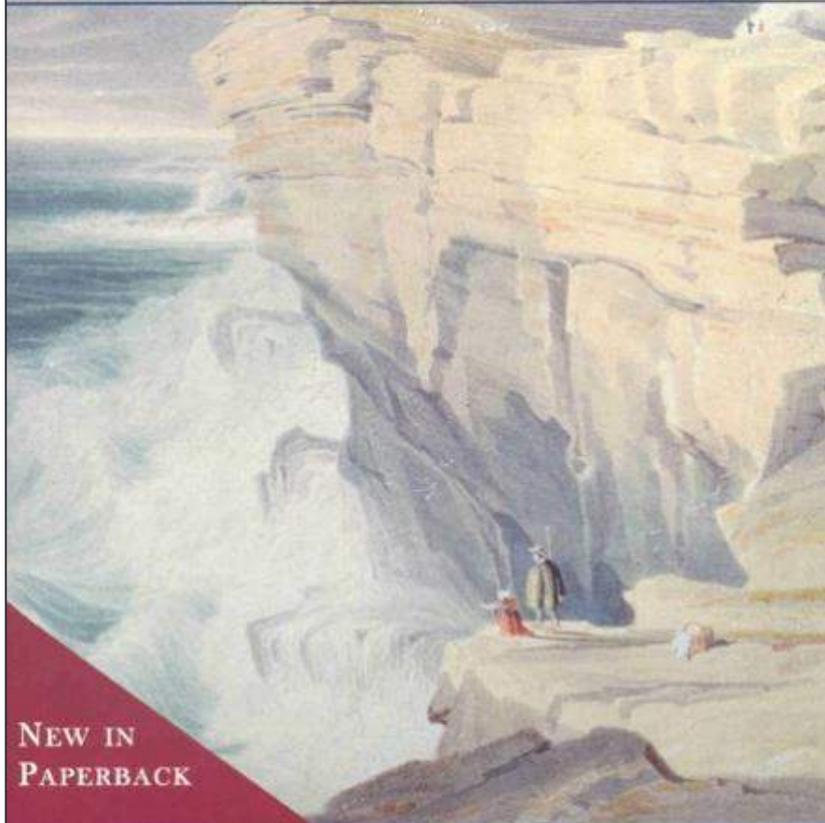
The Ordnance Survey
in Nineteenth-Century Ireland

J. H. ANDREWS

FOUR COURTS HISTORY CLASSICS

GILLIAN M. DOHERTY

THE IRISH
ORDNANCE SURVEY
History, Culture and Memory



NEW IN
PAPERBACK

Civilizing Ireland

Ordnance Survey 1824-1842

ETHNOGRAPHY, CARTOGRAPHY, TRANSLATION



STIOFÁN Ó CADHLA

Foreword by Eamon Ó Carráid

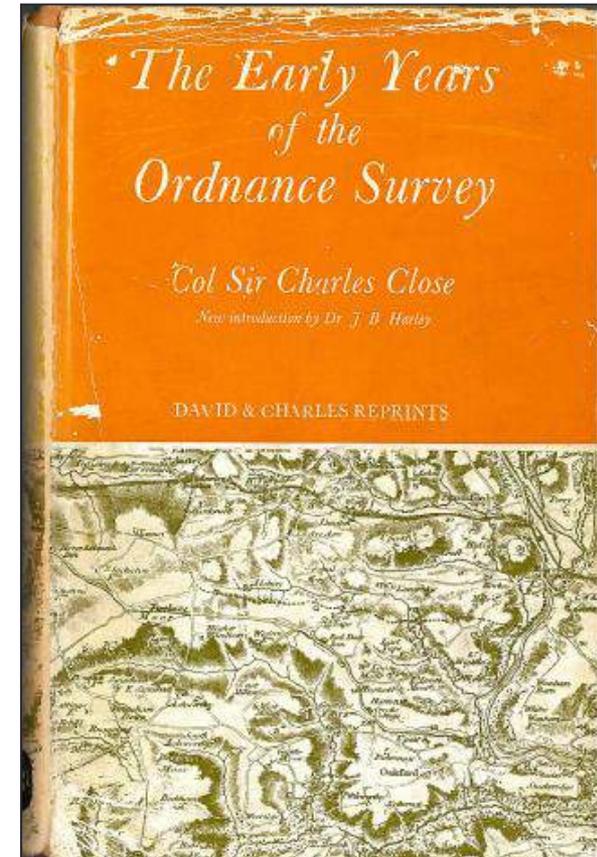
Chronology of the early OS

1921 Col. Close wrote a series of articles for the *The Royal Engineers' Journal* about the origins and first years of Ordnance Survey.

Published in 1926 as *The Early Years of the Ordnance Survey*. (republished in 1969).

Relied on early OS records, especially accounts of Col. Colby.

Much early OS archive lost in WWII bombing.



Colonel Sir Charles Arden Close, Director-General of the Ordnance Survey, 1911 to 1922

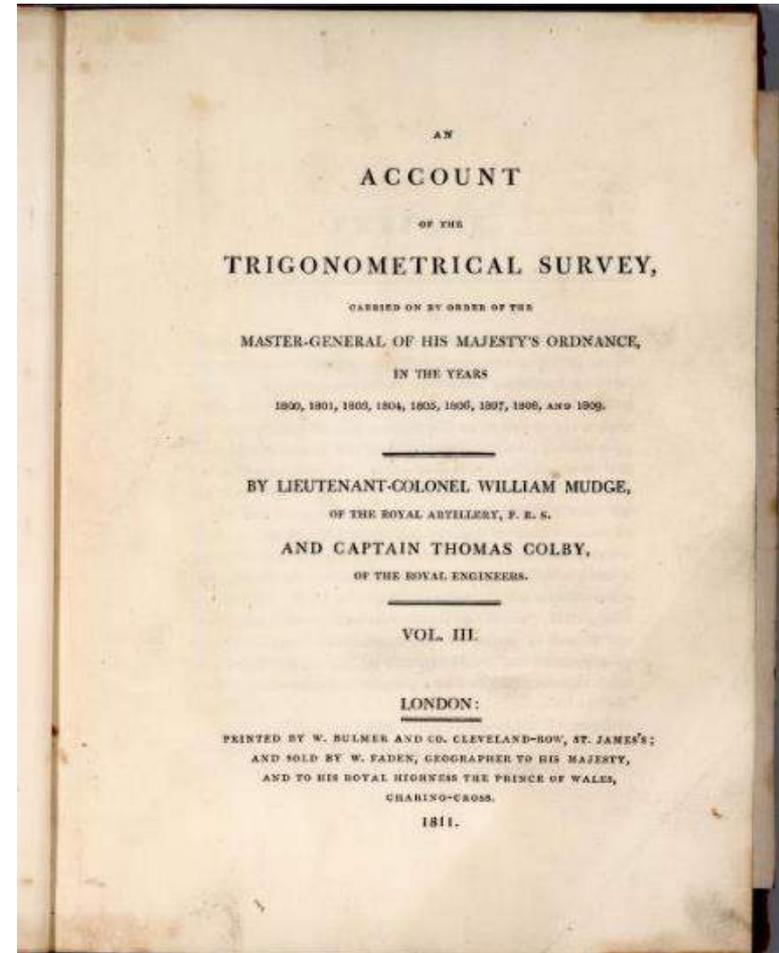
Chronology of the early OS

An Account of the Operations carried on for accomplishing a Trigonometrical Survey of England and Wales from the commencement in 1784 to the end of 1796. By William Mudge and Isaac Dalby.

The Second Volume, continued from 1797 to the end of 1799, by William Mudge.

The Third Volume, *An Account of the Trigonometrical Survey in 1800, 1801, 1803 to 1809*, by William Mudge and Thomas Colby.

3 vols. London, 1799–1811.



William Mudge (1762–1820) English artillery officer and surveyor, appointed in 1791 to the Ordnance Trigonometrical Survey.

Chronology of the early OS

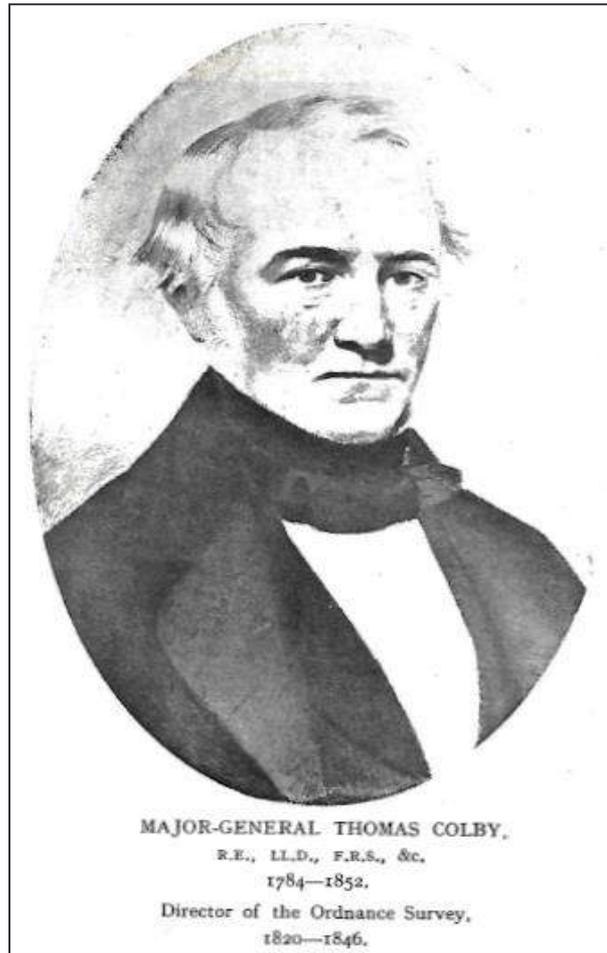
1824 – survey of Ireland:

Select Committee (Spring Rice) on the 'Survey and Valuation of Ireland', Colby recommends 6-inch-to-the-mile scale for the mapping

Parliament authorise £5000 for the 'Trigonometrical Survey of Ireland'

Col. Colby in Ireland "to acquire a general idea of the country, and to seek a proper place for the measurement of a new base-line" (Close p.107)

Lt-Col Portlock posted to OS to assist Colby in Ireland



“Whilst the trigonometrical work in the south-west of Scotland had been in progress [in 1822-23], various hills in Ireland had been marked by signals and were linked up, by intersection, to the Scottish Hills”

Close, p.107.

“Accompanied by Lieutenant Drummond, Colonel Colby traversed Ireland from north to south in 1824, selecting the most suitable mountains for principal stations, and collecting data for determining probable limits of altitude to be represented in the map.” Portlock, pp.122-23.

Chronology of the early OS

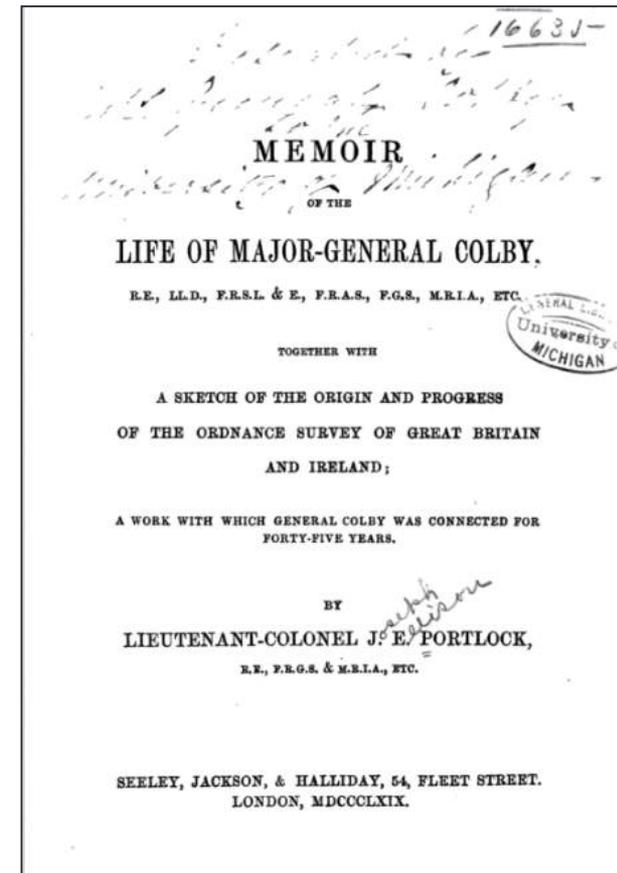
Portlock wrote a *Memoir of the late Major-General Colby, with a Sketch of the Origin and Progress of the Trigonometrical Survey* (reprinted in 1869 from *Papers on Subjects connected with the Royal Engineers*, vols. iii-v.)

Served with Col. Thomas Colby in Ireland on Trigonometrical Survey – a key figure – his memoir is a key source on the OS in Scotland and Ireland in 1820s and 1830s.



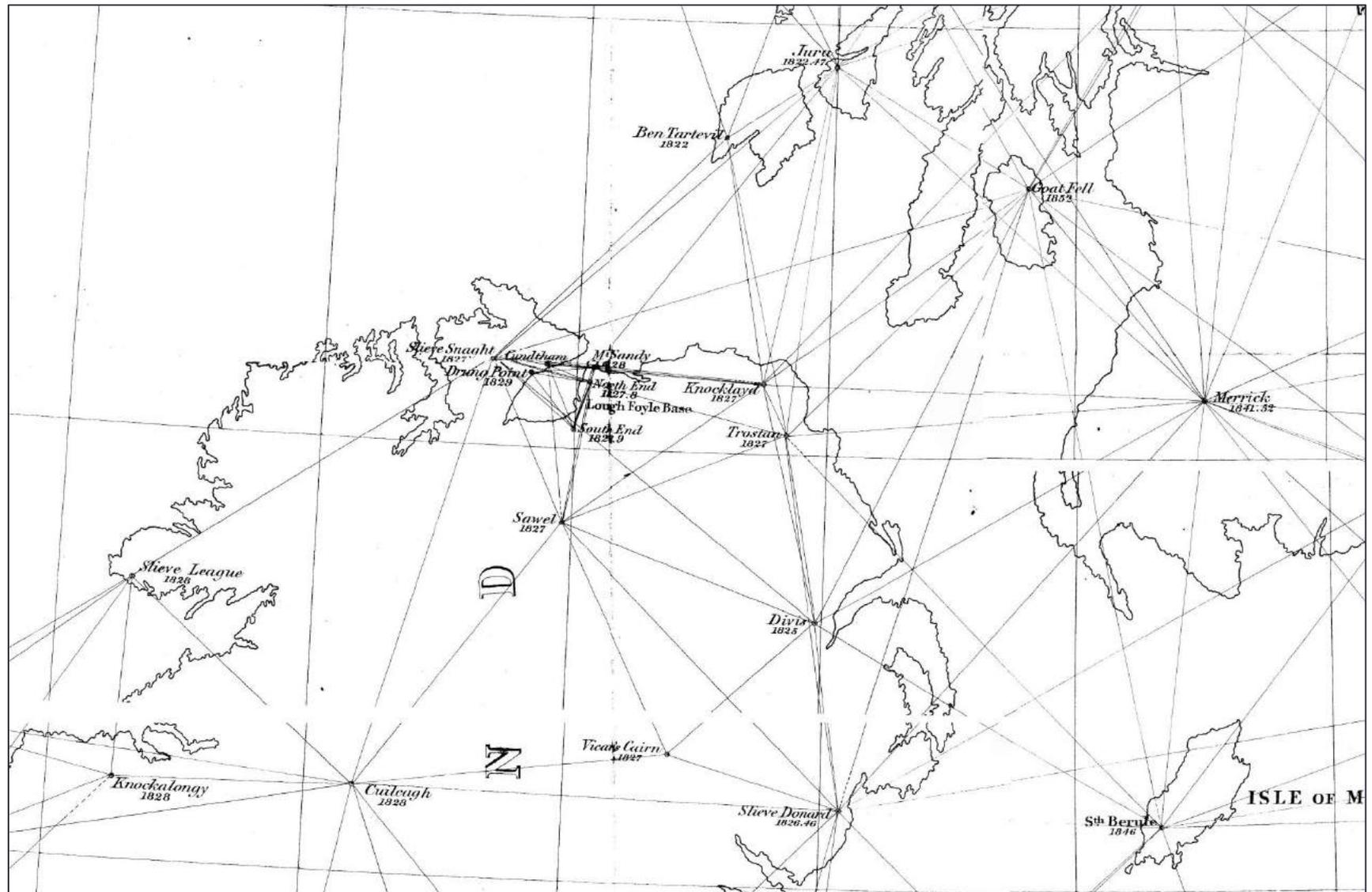
MAJOR-GENERAL J. E. PORTLOCK, R.E.,
LL.D., F.R.S., F.G.S., &c.
1794-1864.

Reproduced, by permission, from a photograph in possession
of the Geological Society of London.



“In 1822 he [Colby] was out again with Vetch and myself [Dawson] on the west coast [of Scotland], and taking me with him, explored the whole range of the Western Islands, from the Mull of Cantire to the Butt of Lewis, and returning to Isla he slept for one night only at the Mull of Oe. In 1825 he was on Divis, and in 1826 on Slieve Donard, in Ireland”. In Portlock, Colby Memoir, p.154.

Trigonometrical survey of Ireland linked to Scotland

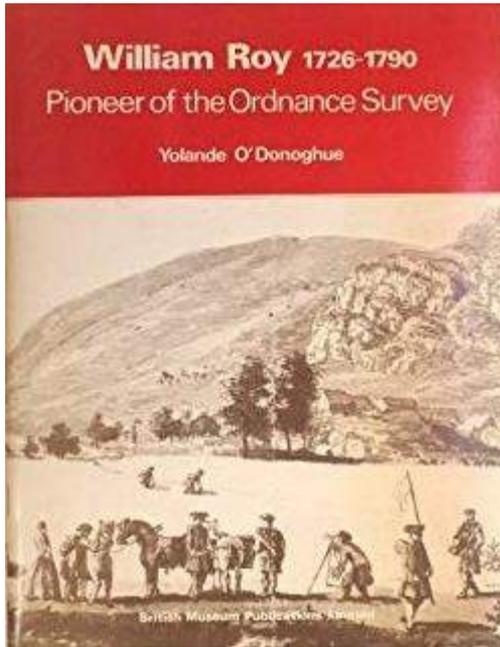


Extract of map of the triangulation of Great Britain and Ireland, from volume 2 of A.R. Clarke, *Ordnance Trigonometrical Survey of Great Britain and Ireland* (William Spottiswoode, 1858).

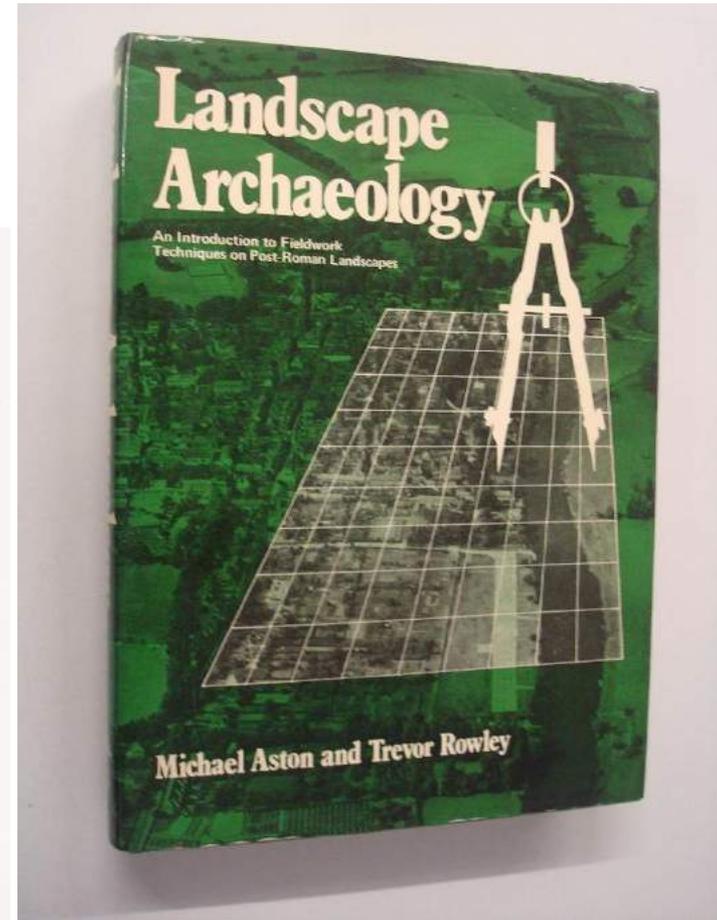
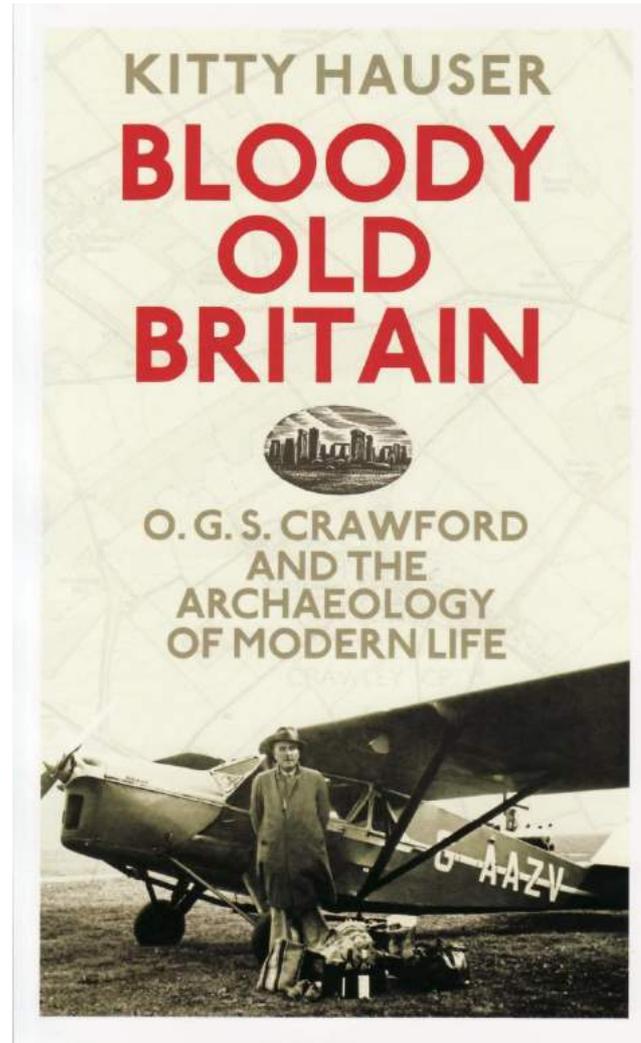
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Archaeology and the OS—a long and close relationship:



Archaeology on OS maps, the legacies of William Roy and O G S Crawford—mapping sites and monuments in the landscape...

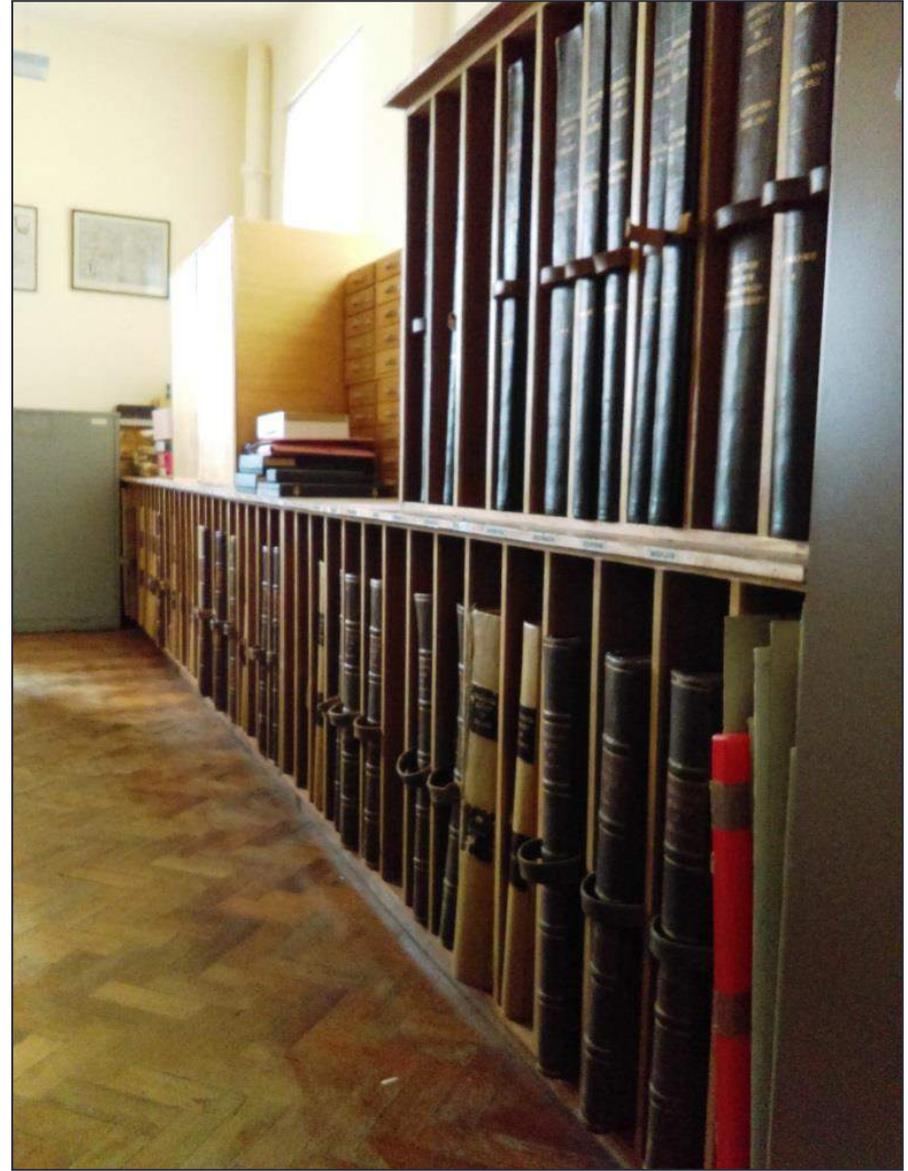


“By far the most important document to the fieldworker is the map, both as a source and as a tool”, M Aston and T Rowley, *Landscape Archaeology* (1974: 59)



Ordnance Survey, six-inches-to-one-mile
'county series' of Ireland, 1829-1842.

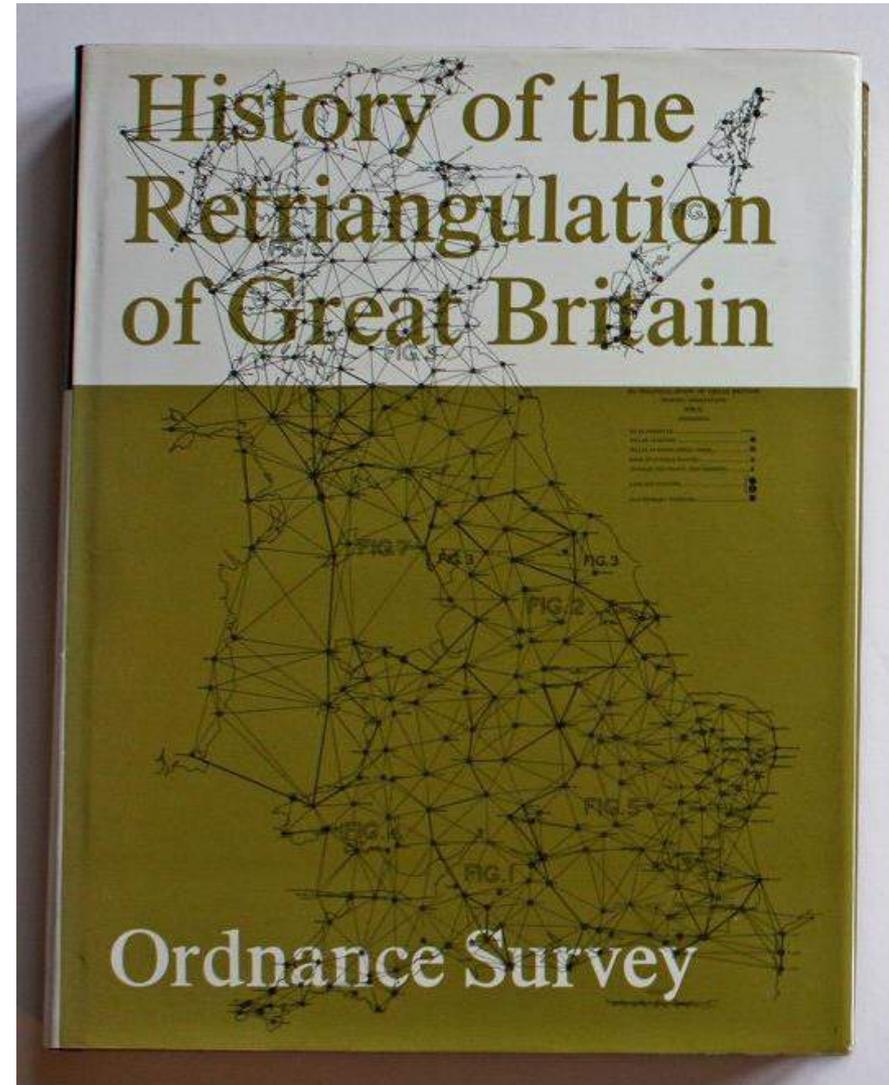
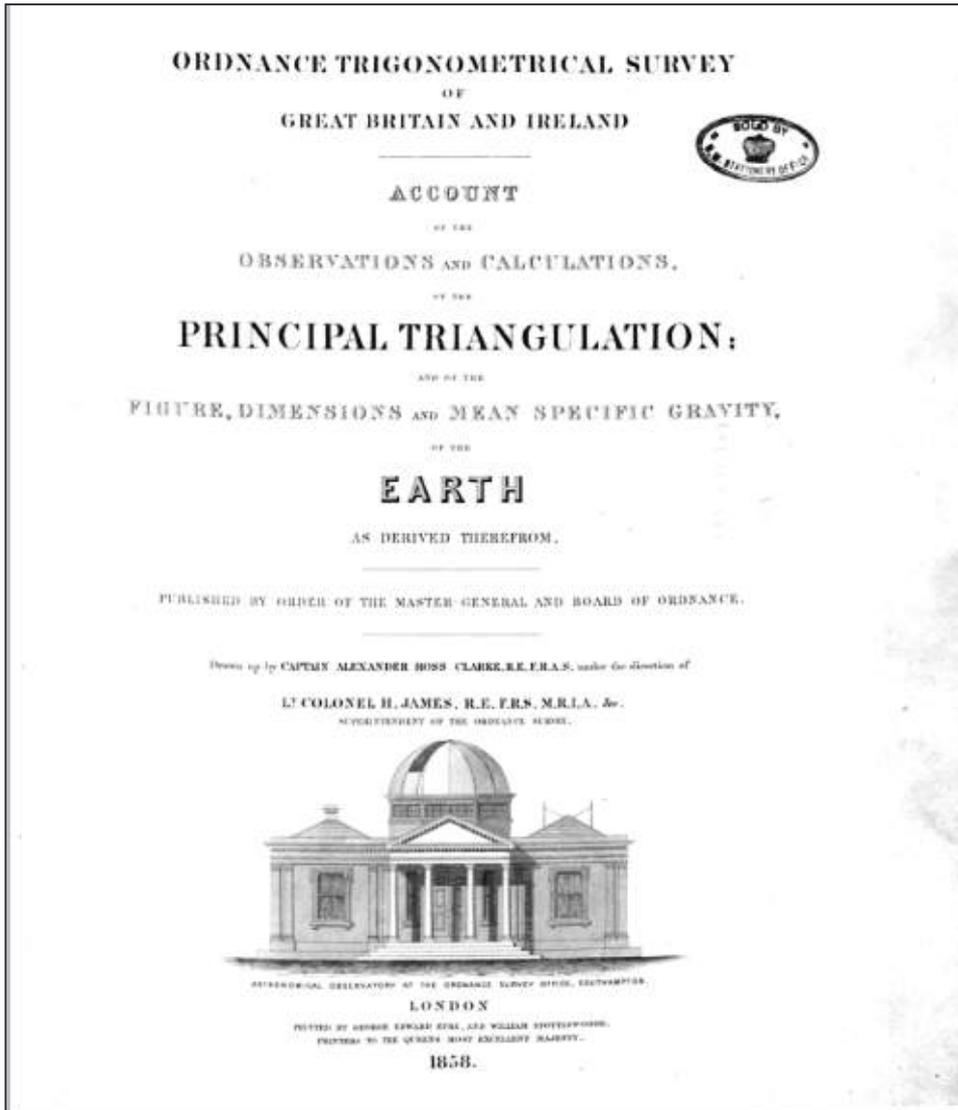
Looking *behind* the map...
An archaeology of cartography



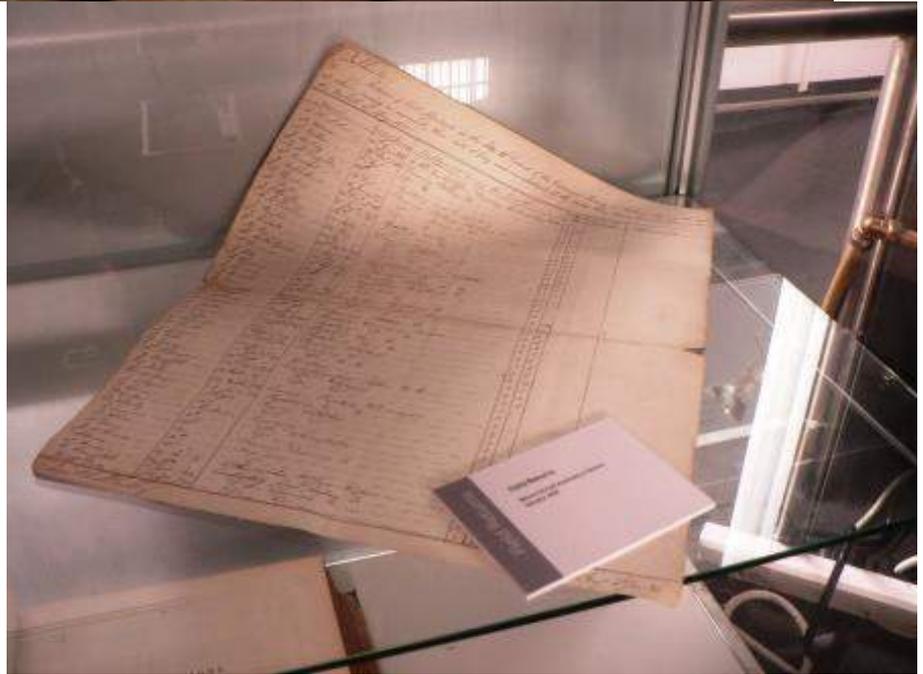
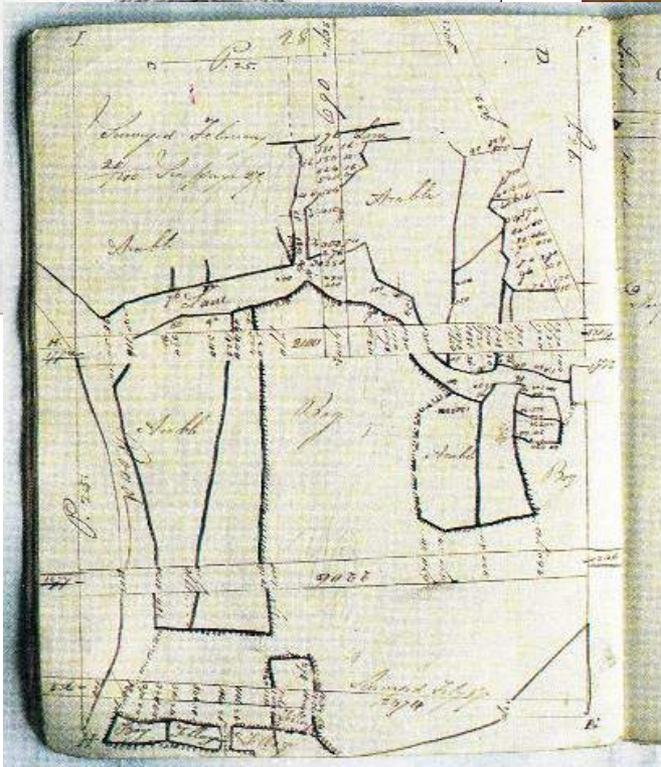
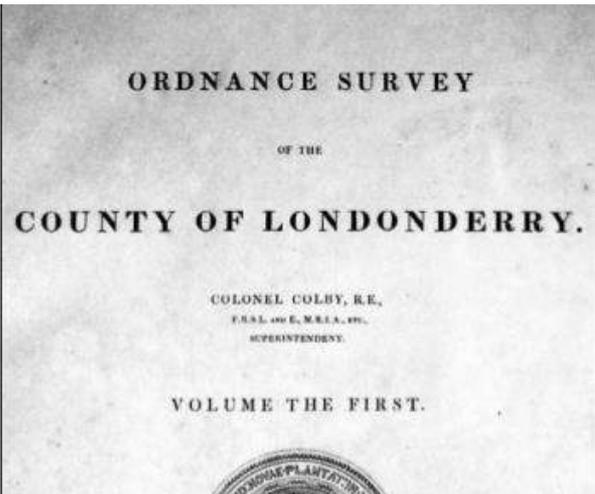
Full set of OS First Ed 6" vols in QUB
Map Library—Elmwood Building



The archive: Records of the Ordnance Survey in Great Britain and Ireland



Accounts of the OS 'principal triangulation' (19th cent) and 'retriangulation' (20th cent)



Printed and manuscript sources – a 'paper landscape'

Material cultures I. Instruments in the field...

Survey of Ireland under Colby & Portlock

Trigonometrical Survey undertaken – stations observed and dates:

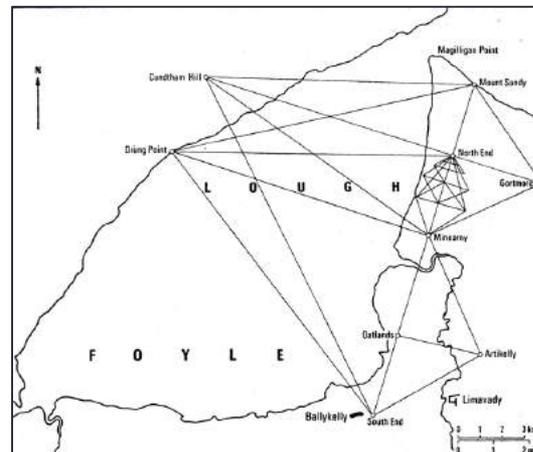
- Divis (1825)
- Slieve Donard (1826)
- Sawel (1827)
- Knocklayd (1827)
- Slieve Snacht (1827)
- Trostan (1827)
- Vicar's Carn (1827)
- Cuilcagh (1828)

Lough Foyle Base measured (1827-28)



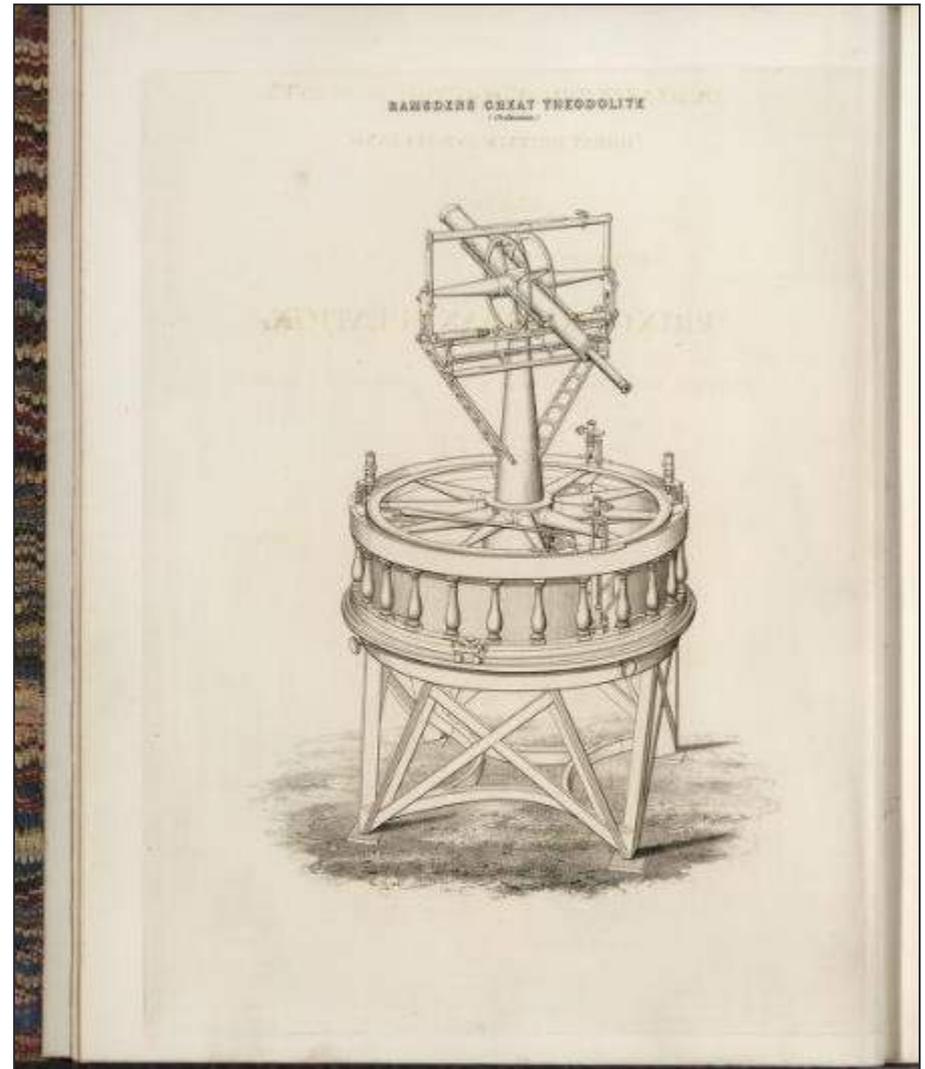
Observing the baseline under tenting

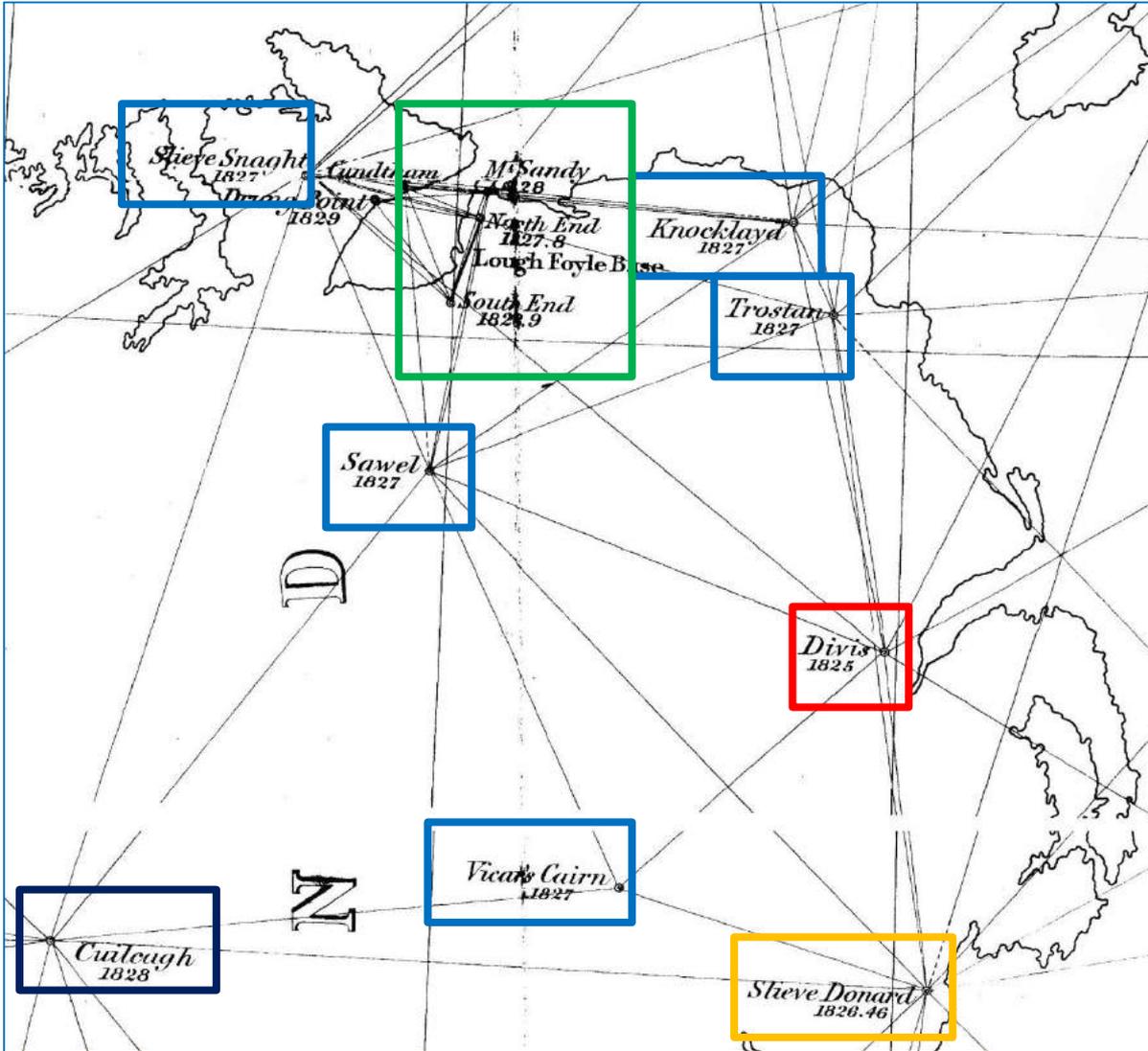
The measurement of the baseline began in 1827 and was observed under tenting to minimise fluctuations in temperature. The bars were mounted on tripods and the total distance of 7.89 miles which included the crossing of the River Roe was completed in November 1828 after 60 days of measurement by 70 men. The accuracy achieved is still marvelled at today.





Ramsden's second (Board of Ordnance) 3-foot theodolite.
Science Museum





OS trigonometrical survey in the north of Ireland

Divis (1825) – Maj-Gen Colby, Col Ord, Capt Henderson, Maj-Gen Portlock, Capt Drummond, Lt Murphy

Slieve Donard (1826) – Maj-Gen Colby, Maj Pringle, Maj-Gen Portlock, Lt-Col Larcom, Sgt Winzer, Sgt Forsyth, 2nd Corp Stewart

Sawel (1827) – Maj-Gen Colby, Maj-Gen Portlock,

Knocklayd (1827), Slieve Snacht (1827), Trostan (1827), Vicar's Cairn (1827) Cuilcagh (1828) – Maj-Gen Portlock

Lough Foyle Baseline (1827-1828) – Maj-Gen Colby, Lt-Col Pringle, Capt Henderson, Capt Drummond, Lt Murphy, Lt Mould

Divis, 1825. “This station is on the summit of a well-known mountain of the same name, about 3.5 miles west of the Exchange Buildings, in the town of Belfast. It may be approached by the Shanklin Road for rather more than a mile, then by a bye-road skirting the mountain on the east side. The station is marked by a pile of large coarse stones, having a diameter at base of 16 feet and raised to a height of about 5 feet; this truncated section of a pile has a small quantity of bog turf on its top. The centre stone has a smooth upper surface, with a well-formed hole in it, 2 inches deep and 2 inches in diameter. It is level with the surface of the mountain. Divis Station is about 140 links due south of a fence which crosses the mountain in an east and west direction”.

All station descriptions from
Clarke 1858, vol 1, pp.1-41



Material culture I. Instruments in the field

Divis: “**the camp on Divis** became a school [...] of geodesical [...] science...”
“the officer of the day was called at earliest dawn to rise, and kept watch on the weather. If the hill continued clear of fog, he called Colonel Colby at the moment when the light became sufficient to prepare for observation.” Portlock, p.126

“The **station of 1826 was Slieve Donard**, in the county of Down; and whilst on this occasion the author [ie. Portlock] proceeded to Wales and Anglesey, to refind stations and erect objects, Lieut. Larcom proceeded to Slieve Donard to prepare it for the great instrument, and thus commenced his connection with a survey in which he afterwards filled so important an office. The author, as soon as he had finished his work in Wales, joined him there, and having put up the instrument, began the observations.” Portlock, p.127

Colby left the mountain in November, Portlock “completed the observations of the station about the 4th of November. [...] The personal superintendence of the great triangulation was from this time confided to the author [ie Portlock], but Colonel Colby still continued to pay him an occasional visit, and to enter with his wonted ardour into duties of the observatory; nor was it his custom to make these visits on stations of easy and pleasant access, but, on the contrary, he usually selected the most difficult and remote. It was that that he appeared **on Sawell, a mountain in a wild district of the county of Derry**, early in a most gloomy morning...” Portlock, p.128

Material cultures II. Infrastructures in the field...

OS field-survey practices:

Survey companies formed by Colby from Royal Engineers (Sappers and Miners), trained in practical geometry at Chatham.

Board of Ordnance handed over Mountjoy House as a HQ for the Survey of Ireland under Major William Reid.

Trigonometrical work begins under Colby in the north of Ireland.



*Royal Sappers and Miners,
1837.*

“The next problem was to get these resources to work, and then to keep the trigonometrical operations and the detail survey in step with one another”.

Andrews, *Paper Landscape*, p.39.



Sketch
showing the mode of proceeding
in measuring

THE LOUGH FOYLE BASE

(The original by Sir J. W. Herschel Bart.)

Reproduced by J. J. Smith in An Account of the Measurement of the Lough Foyle Base, 1847.

Sketch of the measurement of the Lough Foyle baseline, 1826-28, from Ordnance Survey. "An account of the measurement of the Lough Foyle base in Ireland" ... By Captain W. Yolland (1847)

Lough Foyle Base, South End. 1827-28. This station is on a small rising ground called Sheep Hill, about a quarter of a mile south-east from Ballykelly Church, in the townland of Drummond, parish of Tamlaght, and county of Londonderry.

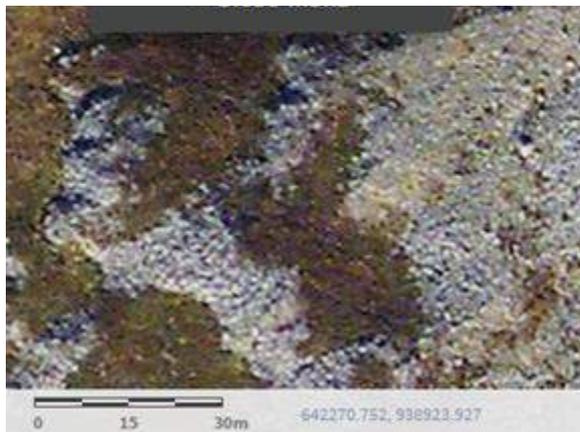
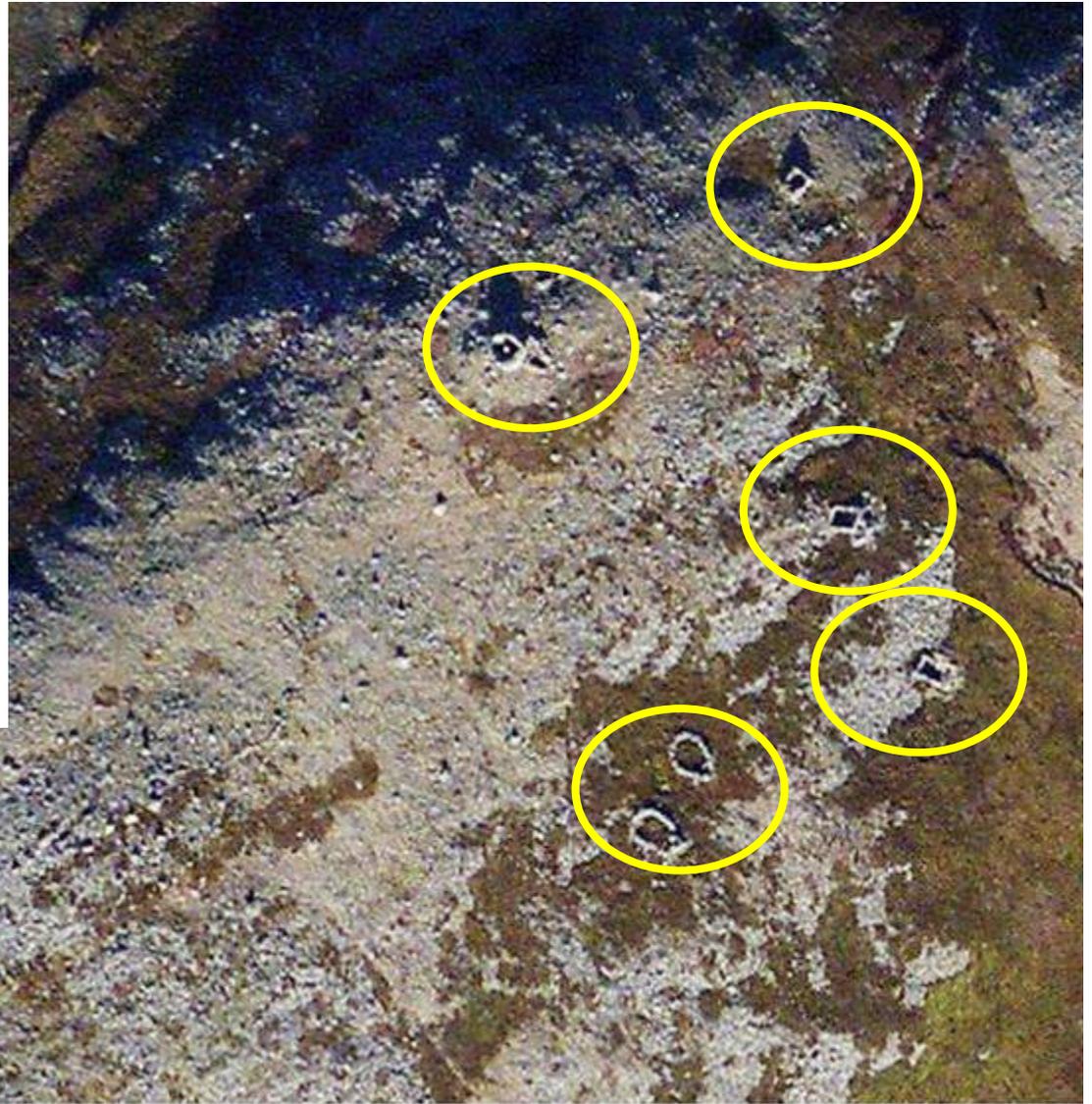
These stations are marked by dots made with the point of a needle in platina wires, eighth of an inch in diameter, run with lead into holes 1.5 inch in diameter and 6 inches deep, bored into blocks of Dungiven sandstone, 4 feet square and 20 inches deep. These blocks are laid in cement above other and similar blocks roughly chiselled, and placed on beds of solid masonry. The whole at each station is enclosed in a chamber of masonry 6 feet square, with walls 2 feet thick and 3 feet deep, covered over with a lid of flagstone, with bolts and rings passing through them, by which they may be removed with safety to the dots. On the upper surface of the flags cross lines are drawn, with the crosses vertically over the dots. This masonry is covered over with a tumulus of earth ; and a circular wall 2 feet thick, with eight internal buttresses, is built as a base for an iron railing 4.5 feet high, enclosing a space 30 feet in diameter. The zenith sector station is in the same field with the south end of the base, from which point it is distant 559 feet due east.



Lough Foyle Base, North End. 1827-28, This station is situated in the townland of Ballymulholland, parish of Magilligan, in the county of Londonderry, about 2.75 miles south of the martello tower on Magilligan Point at the entrance of Lough Foyle. The ground between this station and Mount Sandy is composed of low sand hills, and is much broken and very rugged.



Slieve Snaght, 1827. This mountain is in the parish of Carnadongh, in the county of Donegal. The station, which is on the highest part of the mountain at the east end, is marked by a stone about 2 feet square, having a hole 2 inches deep drilled in its centre, with a pile of stone, 14 feet high and 50 feet in circumference at base, erected over it.

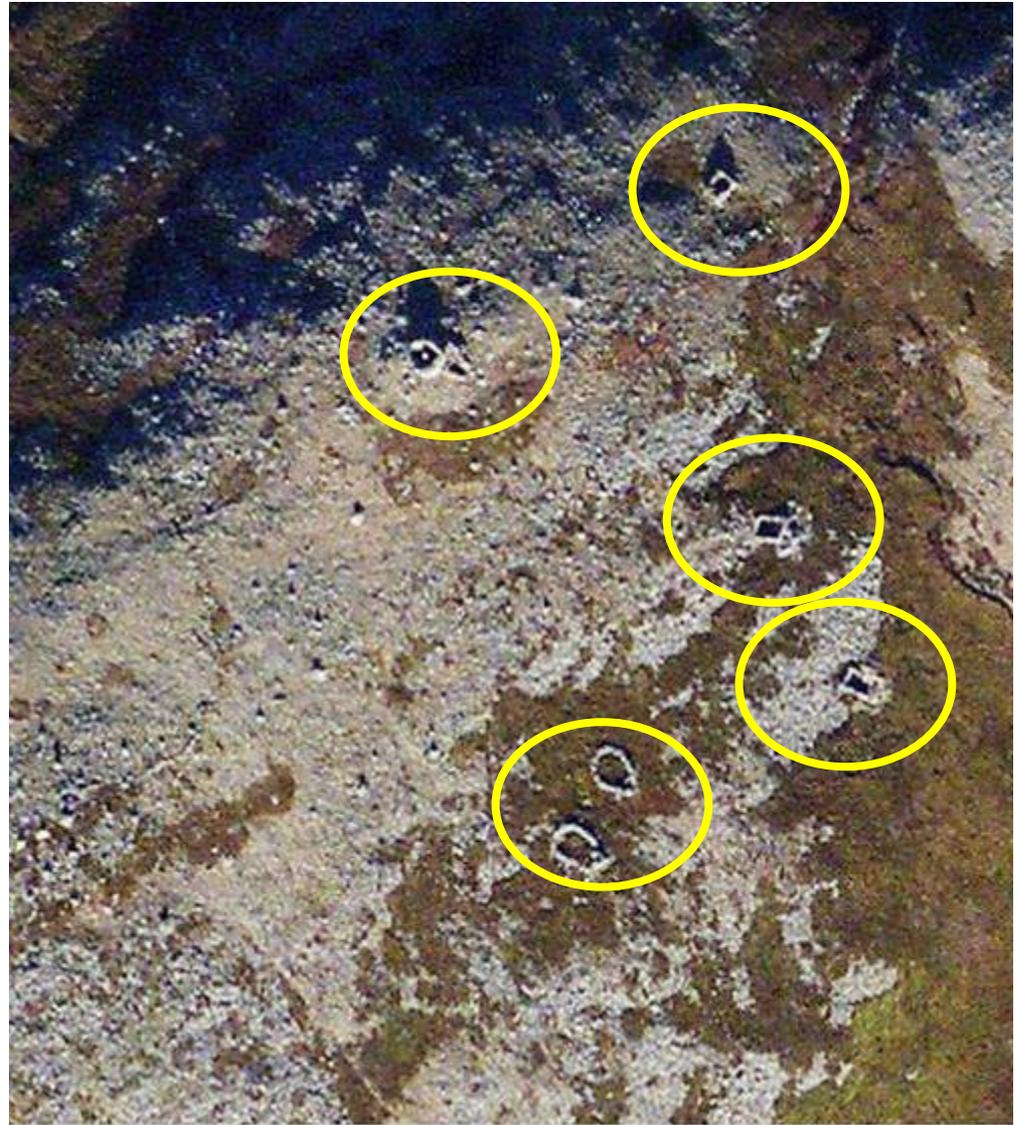


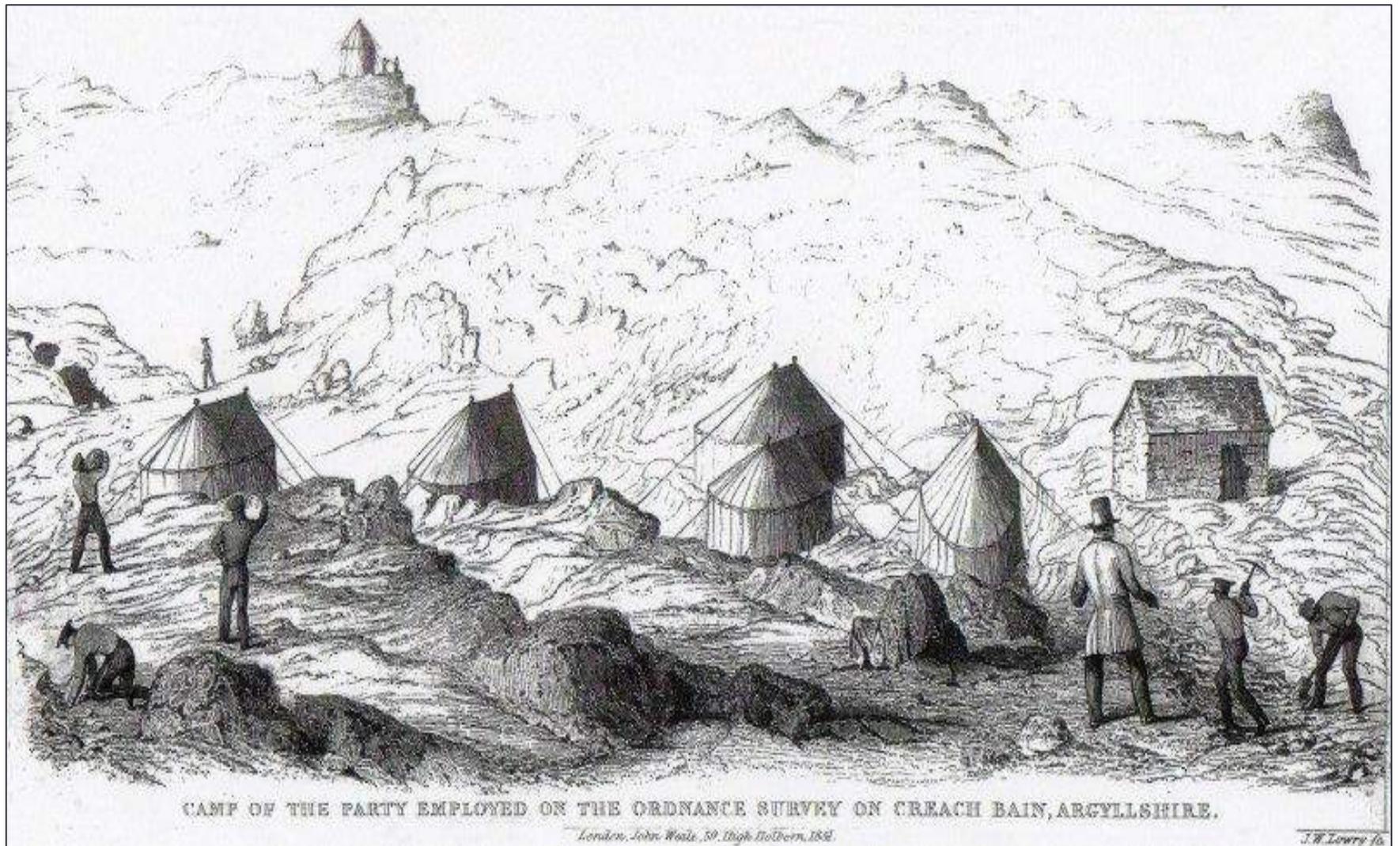
Capt Thomas Drummond on Slieve Snacht, October 1825

Drummond writes to Colby:

“The tent is now up and in a few minutes the wall round it will be completed, so that we may consider ourselves safe against any storm...” 28th October

“Of the termination of our labours the letters from Divis will already have apprised you... At the last we had nothing remaining but the lamp tent and the walls of the cooking house. I believe that we should have been compelled to abandon the hill but for the efforts of the men...” 12th November





<https://canmore.org.uk/site/23114/creach-bheinn>



The camp on Creach Bheinn, Ardgour (NM 879576). Visible are the two massive stone wall windbreaks, between which are four semi-circular stone platforms, possibly bases for tented accommodation and a more substantial building near the lower wall, possibly the cook house or officer accommodation.

From Iain Thornber and Richard Oliver, "Colby's camps", *Sheetlines*, 90 (April 2011), pp.18-22



Creach Bheinn, survey camp and cairn -
SM11059 - Historic Environment Scotland

Share

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- Aerial 2000 ⓘ
- Aerial 1995 ⓘ
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- Historic Map 25 inch (1888-1913) ⓘ
- Historic Map 6 inch B&W (1837-... ⓘ
- Historic Map 6 inch Colour (183... ⓘ
- 6 inch Cassini ⓘ

Nature and Environment

Selection

- Historic Map 6 inch B&W (1837-1... ⓘ
Transparency
- Digital Globe ⓘ
Transparency

Close Menu



“Looking then at the early sheets of the Irish map, the engineer will be struck by the vast amount of data expressed upon them in regard to altitudes, and may also trace, in many cases, the gradual rise of a hill, by following the course of a chain line, and noticing the successive levels marked along it.” Portlock, p.214

“From trig point to trig point the chain was dragged....” Close, p.120



Surveyed 1906. Revised 1927. Partially revised 1933. Levelled 1905. Levels partially revised 1929.

50|37. 25|42.

CHARACTERISTICS AND SYMBOLS

County.....	Townland.....	Trigonometrical Station.....
Barony.....	Municipal Wards.....	Antiquities (Site of) +
Parish.....	Contours.....	

The Representation on this Map of a Road, Track, or Footpath, is no evidence of the existence of a right of way.

Levelling lines

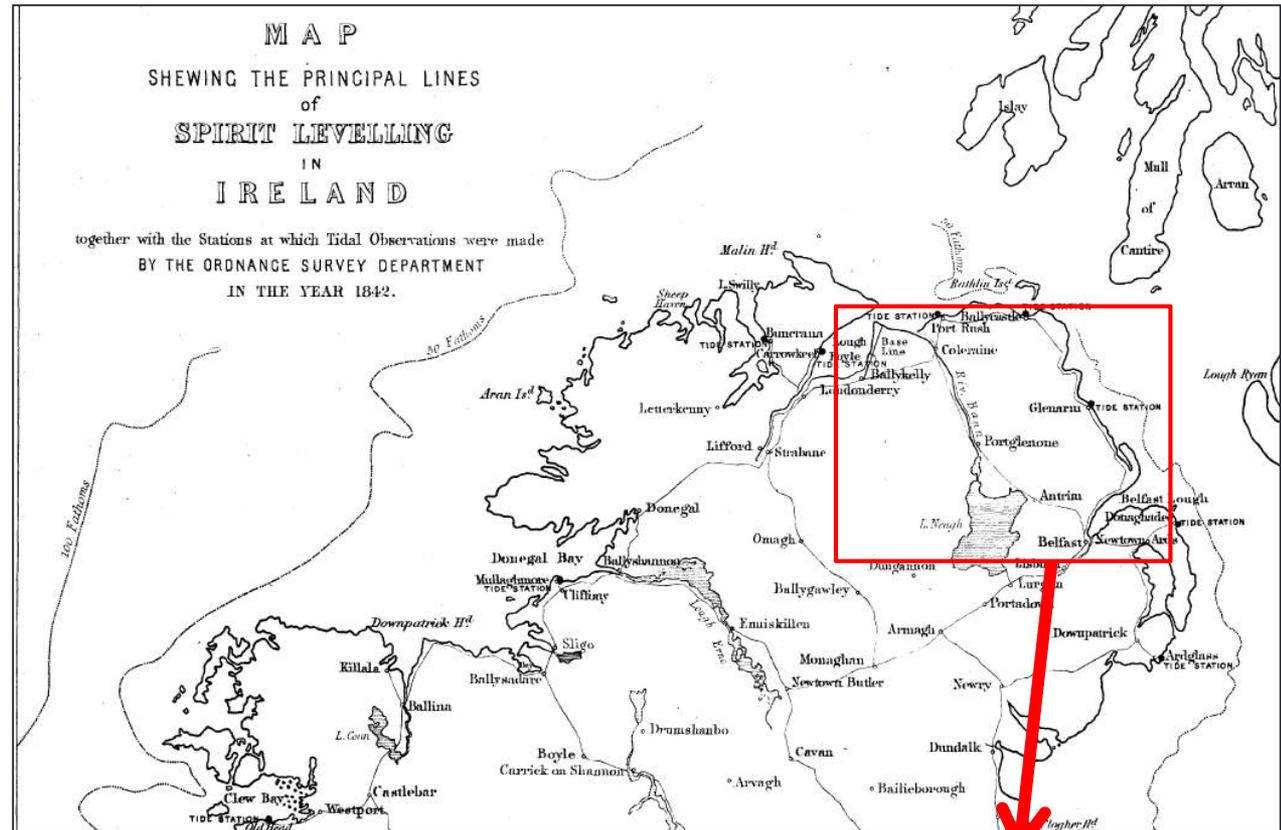
1837-1843

Primary levelling of Ireland – use of spirit levels to measure heights, linked to trig stations. ‘BMs’ on 6” maps shown by 

Field survey for 6 inch mapping completed by 1842, last maps published in 1846.

Estimated cost of £820,000 for Irish survey.

Colby died 1852, having returned to Britain Six-inch scale mapping by OS of Scotland and N England from 1840, following Irish model, E&W from 1858.



Marking the landscape—OS bench-marks and levelling the land...

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ABSTRACT OF LEVELLING FROM BELFAST TO PORT RUSH, The Altitudes are referred to a Low Water of Spring Tides in Dublin Bay, which was

Numbers and Descriptions of Bench Marks, &c.		Approximate Distances between consecutive Bench Marks.	Altitudes.	County, and Sheet of Ordnance Map.
<i>ANTRIM TO PORTGLENONE—continued.</i>				
No. 72.	Mark on battlement of small bridge ; 2'7 ft. above centre of road, and 3'6 ft. above keystone -	3,064	156'840	Antrim 36
No. 73.	„ on battlement of small bridge over mill race ; 2'5 ft. over keystone - - -	1,277	159'058	„ „
No. 74.	„ on stone in end of D. Griffin's house ; 4'3 ft. above centre of road - - -	2,663	182'610	„ „
No. 75.	„ on foundation stone of small bridge ; 3'4 ft. below centre of road, and 1'6 ft. below keystone	2,966	146'398	„ „
No. 76.	„ on rock at side of road near M. M'Keown's house ; 0'5 ft. below centre of road - -	3,245	169'232	„ „
No. 77.	„ on foundation stone of small bridge ; 2'6 ft. below keystone - - -	2,846	136'140	„ „
No. 78.	„ on corner stone of D. Cromie's house at East side of road ; 0'3 ft. above centre of road -	1,738	163'740	„ „
No. 79.	„ on pillar stone of small bridge ; 0'2 ft. above keystone, and 0'8 ft. below road - -	2,215	156'763	„ „
No. 80.	„ on coping stone of wall over pipe ; 2'0 ft. above centre of road - - -	3,892	148'191	„ 31
No. 81.	„ on coping stone of wall over pipe ; 4'2 ft. above centre of road - - -	2,028	133'575	„ „
No. 82.	„ on coping stone of wall over pipe ; 3'8 ft. above road, and 7'4 ft. above keystone -	2,100	95'063	„ „
No. 83.	„ on stonework under iron railing at avenue gate ; 2'9 ft. above centre of road - -	2,478	100'825	„ „
No. 84.	„ on blockstone at door of J. Hammel's house in Portglenone ; 1'2 ft. above centre of road -	898	93'032	„ „
No. 85.	„ on window sill of J. Daly's house at corner of lane ; 3'4 ft. above centre of road - -	1,388	79'532	„ „
No. 86.	„ on North battlement over centre arch of Portglenone Bridge ; 7'5 ft. above keystone -	935	73'537	„ „ Londonderry 33
<i>PORTGLENONE TO KILREA.</i>				
No. 87.	„ on corner stone at rear of J. M'Erleen's house ; 0'6 ft. below centre of cross roads -	1,789	60'748	„ „
No. 88.	„ on stone in front wall of F. M'Eteer's house ; 0'1 ft. below centre of road - - -	3,687	73'959	„ „
No. 89.	„ on stone in wall of J. Blaney's house ; 1'6 ft. above centre of road - - -	1,603	90'819	„ „
No. 90.	„ on corner stone of T. M'Erlean's house in Clady Village ; 3'3 ft. above centre of cross roads	1,658	118'825	„ „
No. 91.	„ on West battlement of Clady Bridge ; 3'5 ft. above road, and 5'8 ft. above keystone -	1,630	91'578	„ „
No. 92.	„ on rock at East side of road ; 0'6 ft. above centre of road - - -	1,300	135'449	„ „
No. 93.	„ on stile leading to R. Kyle's house opposite old road to Kilrea ; 0'6 ft. above centre of road	1,700	141'221	„ „
No. 94.	„ on corner stone of P. Carey's house at East side of road ; 0'6 ft. below centre of road -	2,518	98'813	„ „
No. 95.	„ on corner stone of H. Henry's house at West side of road ; 0'4 ft. below centre of road -	1,478	98'772	„ „
No. 96.	„ on corner stone of P. Madden's house at West side of road ; 2'1 ft. above centre of road -	1,465	120'223	„ „
No. 97.	„ on window sill of B. Henry's house at end of lane ; 2'4 ft. above centre of road - -	2,702	101'888	„ „
No. 98.	„ on foundation stone of pier at Lislea Bridge ; 3'5 ft. below keystone, and 5'2 ft. below }	4,420	57'888	„ „



Types of bench-marks

Mapping Monuments

- The early Ordnance Survey in Scotland and Ireland
- Behind the map—an ‘archaeology’ of the Ordnance Survey?
 - Material cultures I. Instruments in the field
 - Material cultures II. Infrastructures in the field
- Landscapes of survey—field-evidence of the early OS:
 - Landscape legacies I. Desktop study of OS archaeologies
 - Landscape legacies II. Field-survey of OS archaeologies
- Mapping monuments—surveying the surveyors:
 - Bicentenary of the OS in Scotland and Ireland
 - Surveying heritage and a landscape archaeology of the OS

Following in the
footsteps of the
OS surveyors...



Landscape legacies I.

Desktop study of OS archaeologies

The screenshot displays a desktop environment with several windows open. The primary window is a web browser showing a map overlay from the National Library of Scotland. The map shows a landscape with various features, including a 'Cairn' and a 'B.M. 2611.4'. A search box on the left allows for finding a place, with 'cheviot' entered. The map overlay is set to 'OS Six Inch, 1888-1913'.

Overlaid on the map is an Adobe Reader window displaying a PDF document titled 'An_account_of_the_operations_carried_out Mudge '1811 vol 3.pdf'. The document contains a table of OS monuments with their respective grid coordinates and names.

Chawleigh Steeple	50 53 58	3 49 10 W	Cutcombe Steeple	51 8 35	3 3 3 W
Cheltenham Steeple	51 54 7	2 4 6 W	CYRNY BRAIN MOUN		
Chester, Trinity Spire	53 11 26	2 53 1 W	TAIN	53 2 2r	3 3 3 W
Chester-Je-Street Spire	54 51 28	1 33 49 W	Daffenside Beacon	54 49 27	2 30 47 W
CHEVIOT (THE)	55 28 52	2 8 12 W	Daniel's St. Spire	51 40 2	4 5 1 W
Chishall Steeple	52 1 46	0 4 40 E	Davenry Spire	52 15 39	1 9 3 W
Chittlehampton Steeple	51 0 49	3 55 55 W	David's, St., Cathedral	51 52 56	5 14 53 W
Christcross	50 50 18	3 27 39 W	Decuman's, St., Steeple	51 10 36	3 19 36 W
Chumleigh Steeple	50 54 44	2 51 20 W	Denbury	50 20 18	2 10 0 W

The map overlay includes a search box with the text 'Find a place:', a 'Gazetteer / NG Ref.' section with 'UK' selected and 'cheviot' entered, and a 'County' dropdown menu. Below this, there are sections for 'Choose an historic map overlay:' and 'Zoom to this map / map series:'. A scale bar indicates 50 m. The map shows a landscape with various features, including a 'Cairn' and a 'B.M. 2611.4'. The map overlay is set to 'OS Six Inch, 1888-1913'.

At the bottom of the browser window, there is a footer with navigation links: Help, Map Key, Full-screen, 3D, TIP: Hold [Shift] key, and select (drag cursor) to zoom to a specific area., Hold [Alt] and [Shift] keys, and select (drag cursor) to rotate., Use of cookies, Site map, Contact, About.

Landscape legacies I. Desktop study of OS archaeologies

The screenshot displays the National Library of Scotland's online map interface. The main map area shows a georeferenced map overlay of Clisham, with the text 'CLISHAM' visible. The interface includes a search bar, a search results panel, and a navigation panel. The search results panel shows the following information:

- Find a place: Clisham
- Search Gazetteer: UK World
- Search by National Grid Reference: Type Grid Ref...
- Search OS six-inch 1888-1913 names: Type an 1888-1913 name...
- Search County: Choose...
- Choose an historic map overlay:
 - Select a category: Great Britain
 - Select a map / map series: OS One-Inch, 1885-1903 - Hills
- Zoom to this map / map series: [Zoom to this map / map series:](#)
- 74 map overlay layers cover this area
- Change transparency of overlay:

The navigation panel includes the following information:

- Background map: Bing Satellite
- Measurement tools
- Coordinates: NB 15455 07097, 115455, 907097, -6.8128, 57.9619
- Map title: [Harris & S.Lewis] (99), Revised: 1895, Published:1902 - [View this map](#)
- Map description: Harris parish, Inverness-shire (1950s) - [View parish](#)
- Coordinates: 57° 57' 43" N 6° 48' 47" W

The footer of the interface includes the following text:

Very grateful to [David Rumsey](#) for supporting the scanning and georeferencing of this overlay © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DS [Terms of Use](#)

Use of cookies Site map Contact About

<https://maps.nls.uk/geo/explore/#zoom=15&lat=57.96373&lon=-6.81255&layers=1&b=1>

Using online web-mapping platforms to locate early OS field-survey sites and monuments, eg National Library of Scotland

Cleisham, 1840. This, the highest mountain in the Hebrides, is in that part of the Island of Lewis which is in the county of Inverness. It is near the south and west shore of Loch Seaforth, and, being the most conspicuous object in that part, cannot easily be mistaken. **The huts** nearest to the mountain are at Marvig, from which it is distant about 3 or 4 miles. West Tarbert, a small village on the south side of the hill, is about 6 or 7 miles distant. On account of the accommodation which the observing party in 1840 required, the men and stores were landed at a farm house and shooting lodge at Mole-na-harig, about 6 miles south-west from the hill. The station is upon the highest point of the mountain. A **pile 18 feet high** occupied the site of the station previous to the preparation of the ground for the reception of **the frame of the instrument in 1840**, but on taking it down no centre mark was found. The centre of the pile was therefore ascertained by careful measurement, and the instrument placed over it. On quitting the station the wooden pickets were left in the rock, a **large stone with a centre hole** in it was placed even with the surface, and a stone pile 21 feet on slope, and 18 or 19 feet in diameter, erected. A few feet from the pile is a large rock.



Maps of Great Britain

Name:	Ordnance Survey
Title:	Diagram shewing the principal triangulation for the Ordnance Survey of Great Britain and Ireland
Imprint:	Ordnance Survey, 1856
Pagination:	1 map ; 82 x 57 cm.
Shelfmark:	Map.Area.C16(144)
Zoom Into Map:	Click on the map to view in greater detail .



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[Help](#)

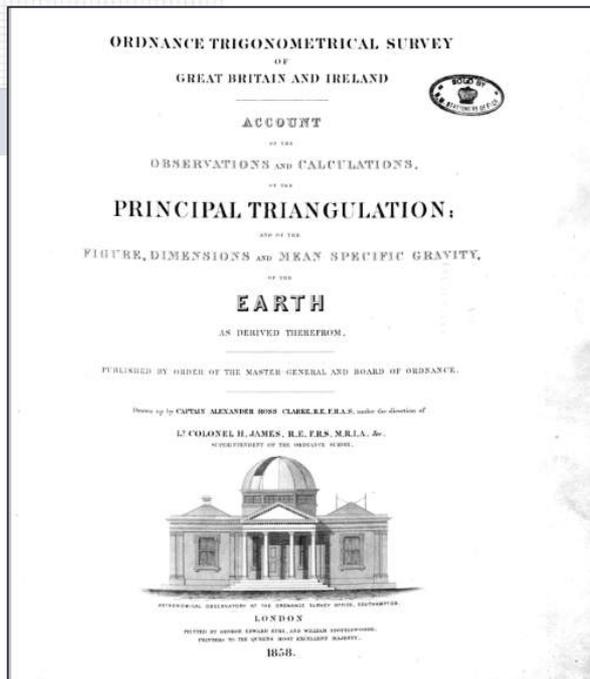
[Privacy](#)

[Copyright](#)

[Site map](#)

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A.R. Clarke, *Ordnance Trigonometrical Survey of Great Britain and Ireland: Account of the observations and calculations of the principal triangulation; and of the figure, dimensions and mean specific gravity of the Earth as derived therefrom* (William Spottiswoode, 1858).

<https://maps.nls.uk/britain/rec/4139>

Swipe OFF

Swipe ON

1. Select a category: Great Britain

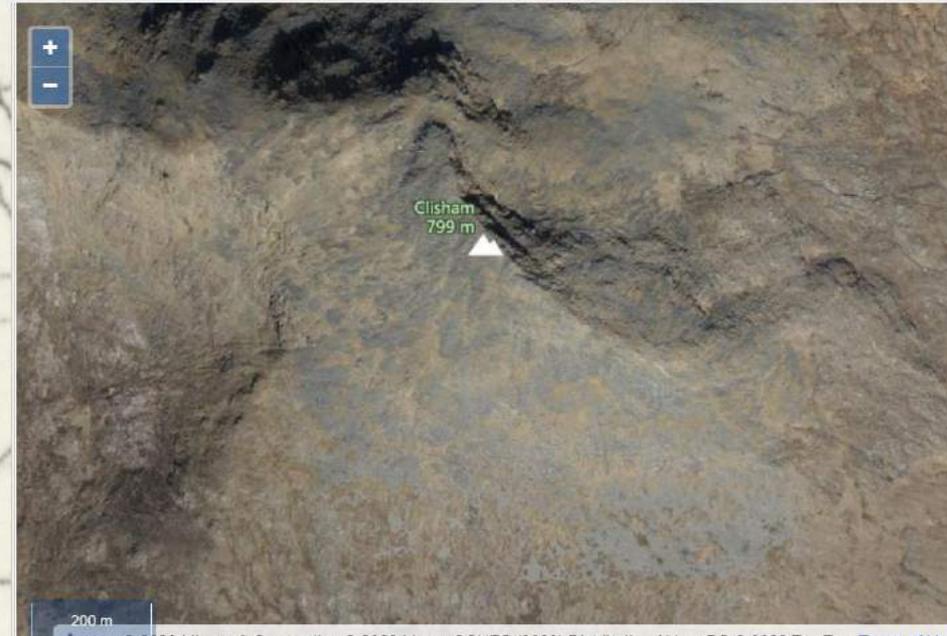
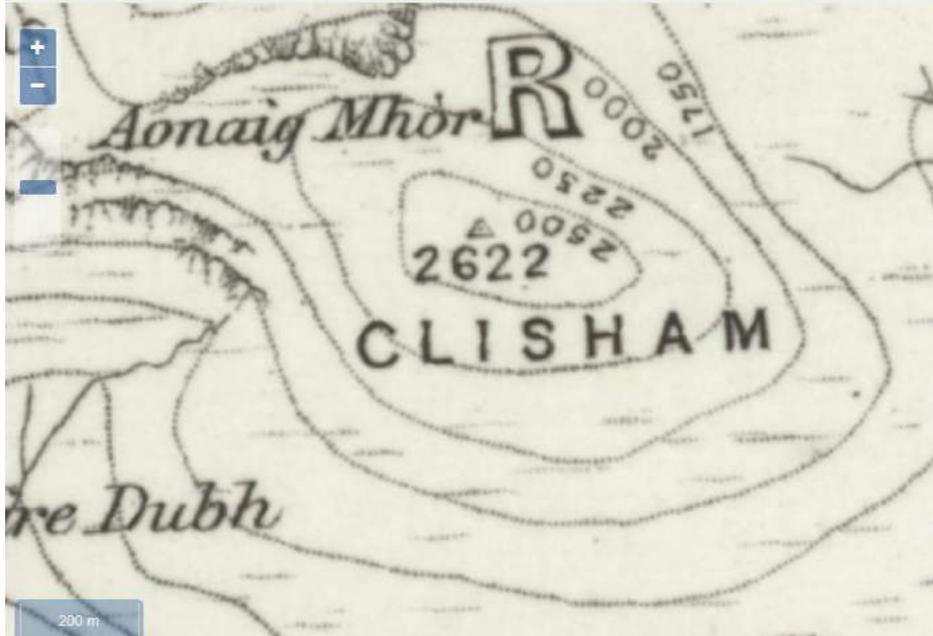
2. Select a map series: OS One Inch, 1885-1900 - Outline

[Zoom to extent](#)

1. Select a category: Bing / ESRI / OSM / LiDAR

2. Select a map series: Bing Hybrid

[Zoom to extent](#)



<https://maps.nls.uk/geo/explore/side-by-side/#zoom=15&lat=57.96370&lon=-6.81250&layers=1&right=BingHyb>

1. Select a category:

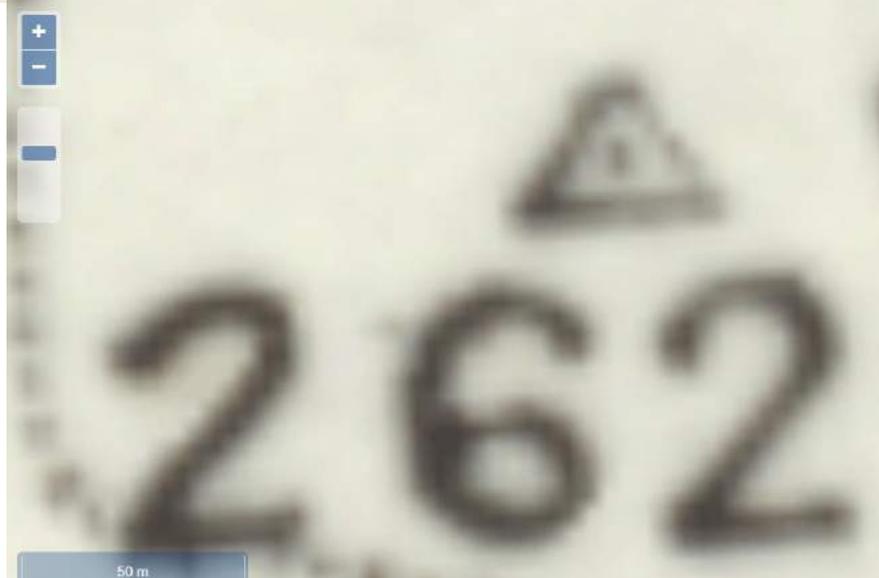
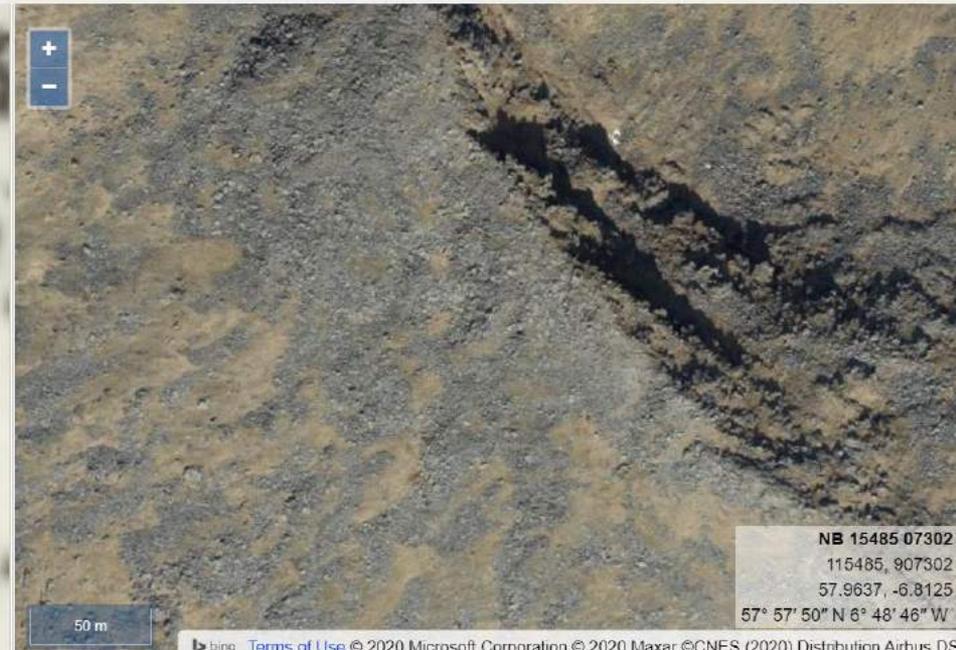
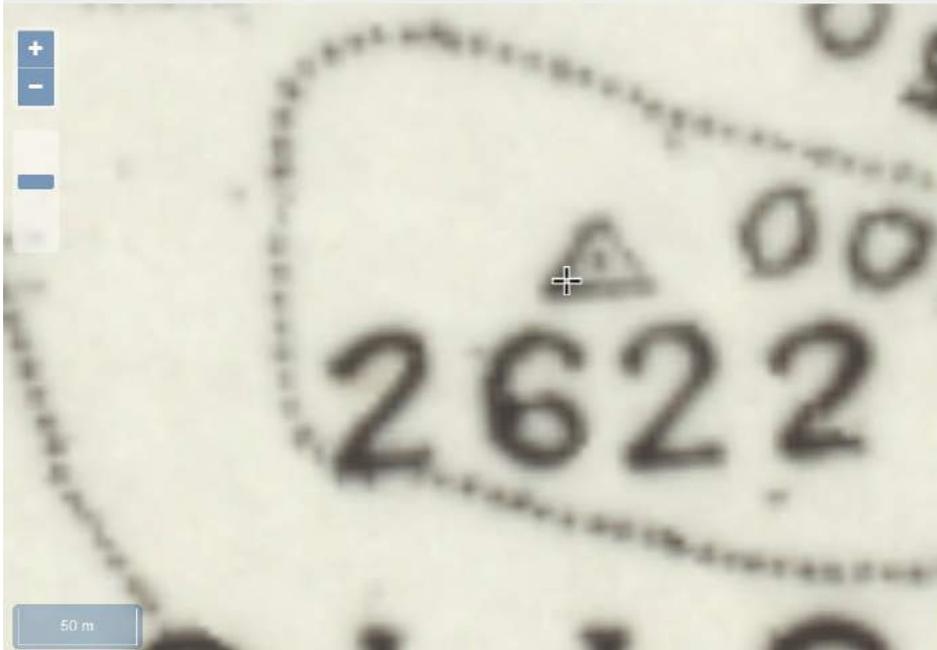
2. Select a map series:

[Zoom to extent](#)

1. Select a category:

2. Select a map series:

[Zoom to extent](#)



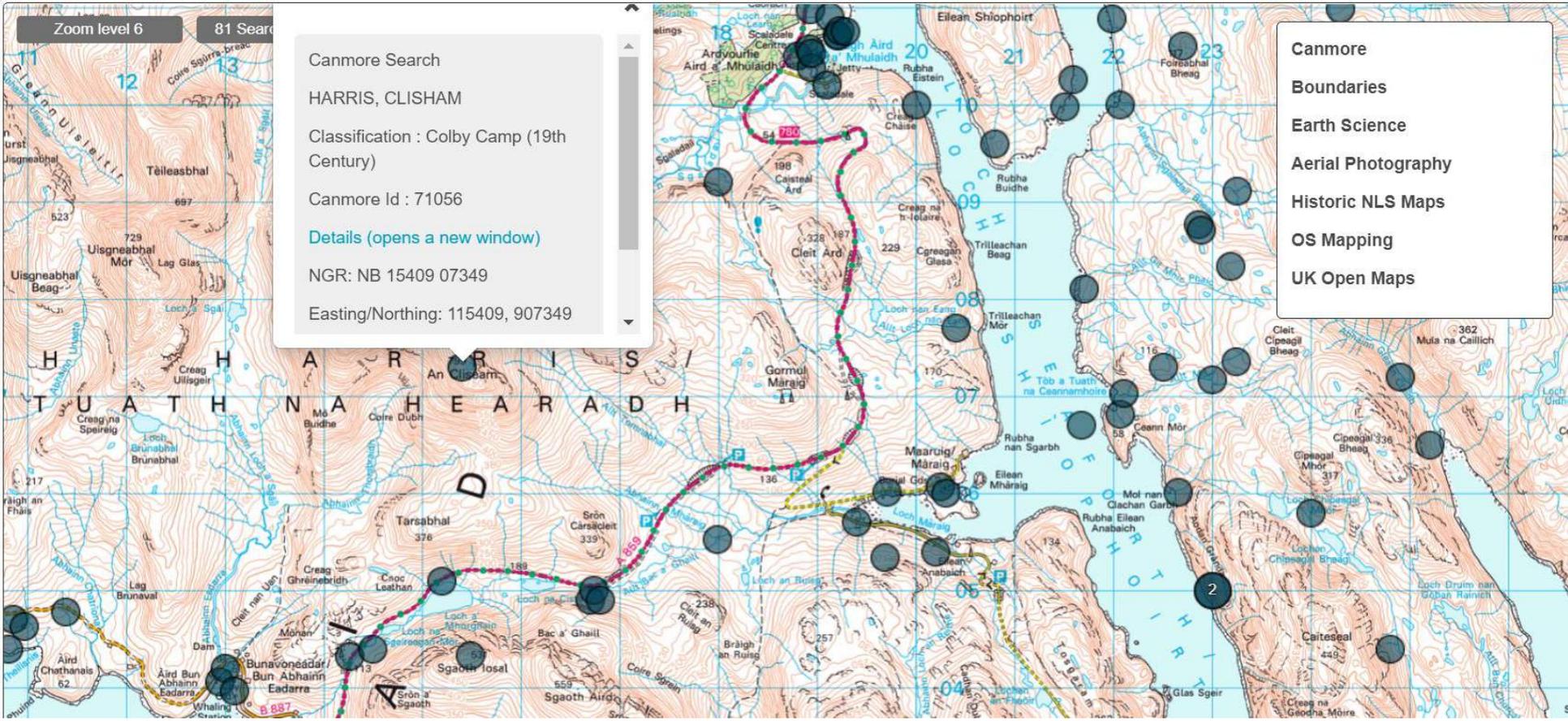


<https://www.walkhighlands.co.uk/outer-hebrides/clisham-direct.shtml>



[Back to Search Results](#)

Fullscreen Grid(N) Zoom To... + - [Map Icon] [Edit Icon] [Location Icon] Clear



Canmore Search
HARRIS, CLISHAM
Classification : Colby Camp (19th Century)
Canmore Id : 71056
[Details \(opens a new window\)](#)
NGR: NB 15409 07349
Easting/Northing: 115409, 907349

Canmore
Boundaries
Earth Science
Aerial Photography
Historic NLS Maps
OS Mapping
UK Open Maps

Archaeology Notes



Event ID 732879

Category Descriptive Accounts

Type Archaeology Notes

Permalink <http://canmore.org.uk/event/732879>

NB10NE 3 154 073.

There is a 'Colby' camp, similar to that at Creach Bheinn (see [NM85NE 2](#) for details) situated beside the primary triangulation pillar on Clisham, at NB 1548 0730.

Information from Mr F Bellamy, Superintendent Geodetic Control, Ordnance Survey, November 1971.

Related Site(s)



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database right 2020.

Harris, Clisham
Colby Camp (19th Century)
Canmore ID [71056](#) |

<https://canmore.org.uk/event/732879>

Swipe OFF

Swipe ON

1. Select a category: Great Britain

2. Select a map series: OS One Inch, 1885-1900 - Outline

[Zoom to extent](#)

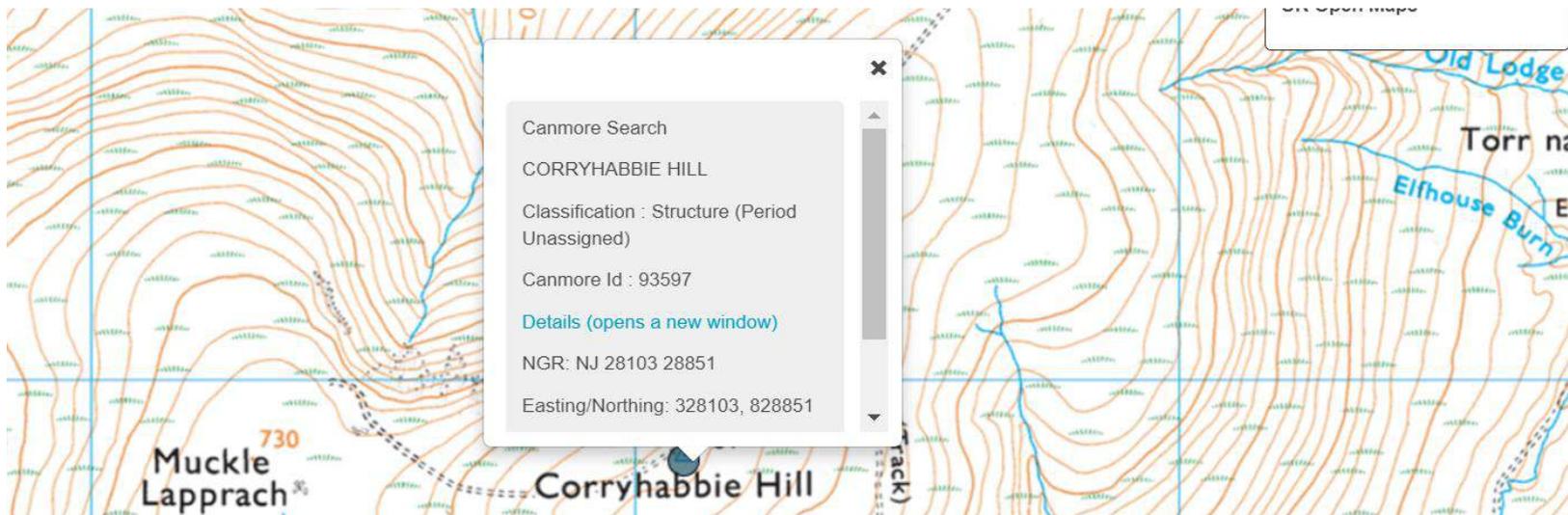
1. Select a category: Bing / ESRI / OSM / LIDAR

2. Select a map series: Bing Hybrid

[Zoom to extent](#)



<https://maps.nls.uk/geo/explore/side-by-side/#zoom=16&lat=57.34443&lon=-3.19556&layers=1&right=BingHyb>



Notes from the field... Colby in Scotland at Corryhabbie (Moray)

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Mr. Dawson, with whom Lt. Colby was living, and to whose house he was brought, took every proper step, and amongst others immediately sent to me. I consequently came with all possible speed. It is . . . with a degree of satisfaction proportionate to my regard for this most excellent but unfortunate young man that I have to state the confident expectations entertained of his recovery, without the smallest injury to his intellects."

Colby was a man of unusual strength of constitution, and he recovered; but for the rest of his life his forehead bore the mark of the accident. He accustomed himself to observe with the large instruments, though he had only his right hand. Portlock, who knew him well, wrote in the *Memoir* that it was "impossible not to recognise in the injury inflicted on his skull a sufficient cause both for subsequent bodily ailments and for a reluctance to enter on long continued mental exertion." However that may be, there is abundant evidence that the injury did not, in later years, materially affect his activity either of mind or body, though we may, perhaps, attribute to it a certain unwillingness to tire himself with controversy.

It has been seen how much personal work Colby carried out during Mudge's directorate: The following letter from Colby to Mudge describes some of the conditions of work in Scotland:—

Benclach, near Alton,

24th July, 1818.

"The country which we have now to deal with is so extremely wild and destitute of accommodations of every kind, and the mountains are so high and difficult of access, and, moreover, seem at such long distances, that they require larger objects than those that were wont formerly to be erected, in consequence I have been compelled to send two men together instead of one alone to erect the objects, and the allowance of 2s. 6d. each object heretofore granted is become obviously too small. I have, therefore, to request that you will sanction me in raising it to 3s. 6d. each object. . . In this, as in everything else which regards the Survey, I have paid the utmost attention to economy, and I am willing to try the effect of what I consider as a minimum allowance. . . In the western part of Scotland, from the want of roads and carts, and the extreme height of the mountains, no station can be visited without very considerable expense, and I shall, therefore, endeavour to perform the Survey of it with as few stations as possible by the intersections of objects on the mountains, which will serve all the requisites of the map. . ."

Portlock includes in his *Memoir* an account, written in 1852, by Major R. K. Dawson, of a season spent under Colby's command in the Highlands. This account, from which the following paragraphs are extracted, gives an excellent picture of Colby's manner of life when at work, before he became Director of the Survey:—

"In the month of May, 1819, Lieutenant Robe and myself were appointed assistants to Capt. Colby on the Trigonometrical Survey,

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and on the 5th June following I embarked in charge of a selected party of artillerymen, the instruments, and camp-equipment, for Aberdeen. . .

"We were joined at Huntley by Captain Colby, he having travelled through from London on the mail coach. . . . This was Captain Colby's usual mode of travelling, neither rain nor snow, nor any degree of severity in the weather, would induce him to take an inside seat or to tie a shawl round his throat; but, muffled in a thick box-coat, and with his servant Frazer, an old artilleryman, by his side, he would pursue his journey for days and nights together, with but little refreshment, and that of the plainest kind—commonly only meat and bread, with tea or a glass of beer.

From Huntley, Captain Colby proceeded with us on foot, and on the second afternoon we reached the base of the mountain [Corryhabbie] in Glen-Fiddick, near to a hunting lodge of the Duke of Gordon. Here, by partially reducing the loads on the cars, and by the application of guy-ropes to support them, and with the men's shoulders to the wheels, we climbed up as far as we could; and, having unloaded the cars, made an irregular kind of encampment for the night. It was a fine evening; and we had need, therefore, of but slight covering; and anything like luxury was, of course, out of the question. A marquee was pitched for Captain Colby, in which he slept, in his clothes, on a bundle of tent-linings; and I, knowing no better, was content to put up with the like accommodation; but Robe, who had recently been with the Army of Occupation in France, like an experienced campaigner, set to work with his Portuguese servant, Antonio, who had also been with him on the continent, and soon put up his camp bedstead, and made himself much more comfortable—a lesson which I did not fail to profit by in my after-experience.

"On the following morning the really laborious part of the business commenced, that of conveying the camp-equipment, instruments, and stores to the top of the mountain. Horses were hired for the purpose and made to carry the packages slung like panniers over their backs, so far as the ground proved tolerably even and firm; but when it became broken and hummocky, which is commonly the case with peaty soils, or springy and wet, there was then no alternative but to unload the horses and carry the things on the men's shoulders. . . Captain Colby went on, taking Robe and myself with him, to the summit, where he selected a spot of ground for the encampment as near as practicable to the station, and also for the watch-tent, at a point much nearer still. He then selected a suitable place for a turf-hovel, to be built on the sloping face of the hill, with a tarpaulin roof, in which to make a fire for cooking, and for drying the men's shoes and clothes, and to serve also as a place of shelter and warmth for the men in tempestuous and severe weather. When some of the tents had been brought up, and one or two of them pitched for present use, a party of the men were withdrawn from this duty, and employed in pulling down the conical pile of stones built round the station-staff, and in setting up in its place the observatory-tent. The requisite steps were then taken for securing the table or stand, for the great theodolite; and the theodolite itself was then brought up with special care and fixed in its position. . . ."





“Whilst the trigonometrical work in the south-west of Scotland had been in progress [in 1822-23], various hills in Ireland had been marked by signals and were linked up, by intersection, to the Scottish Hills.” Close, *Early Years*, p.107.



Little Trosk above Carnlough, Co. Antrim. Photo Mark Gardiner



“Looking then at the early sheets of the Irish map, the engineer will be struck by the vast amount of data expressed upon them in regard to altitudes, and may also trace, in many cases, the gradual rise of a hill, by following the course of a chain line, and noticing the successive levels marked along it.” Portlock, p.214

“From trig point to trig point the chain was dragged....”
Close, p.120

**OS survey bolt on boulder
on Black Mountain**

**Primary trig on Divis
summit in the background**

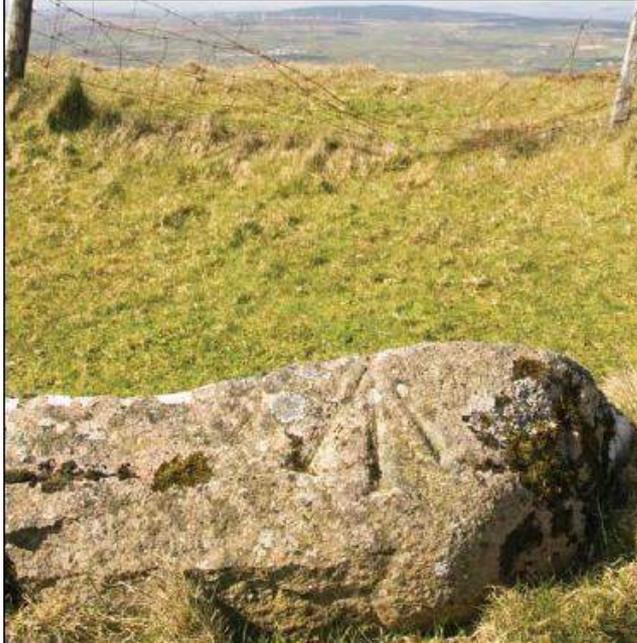
Mapping Monuments

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 - **Surveying heritage and a landscape archaeology of the OS**

Limavady
Heritage Trail

The Ordnance Survey of Ireland

The Lough Foyle Baseline



Surveying heritage - potential for heritage interpretation and tourism

The Ordnance Survey of Ireland

The Lough Foyle Baseline

**“The most disagreeable part
of the three kingdoms is
Ireland, and therefore
Ireland has a splendid map.”**

Lord Salisbury, 1883

The Irish Ordnance Survey, led by Lt Col Thomas Colby, completed the world's first large-scale mapping of an entire country by 1846. The accuracy achieved is still marvelled at today.

The maps were based on a framework of triangulated points. The first leg of the first triangle, known as the baseline, was drawn along the flat eastern shore of Lough Foyle in 1824. The baseline was the longest of its kind, almost 8 miles, and was measured by the

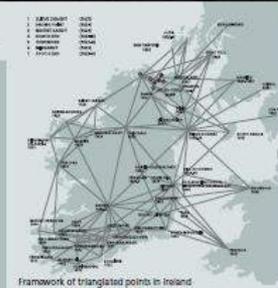
highest standards of accuracy ever before achieved. In 1960 it was re-measured using electronic equipment – the new measurement only differed by one inch.

The survey was carried out with the help of tools especially developed for the project, most notably an iron and brass compensation bar, a strong Lighthouse and a heliostat reflector for daylight observations, all developed by Lt Thomas Drummond, a leading mathematician and inventor.

The first 6 inch maps provided the basis for Sir Richard Griffith to complete an accurate survey of property occupiers between 1848 and 1864 and provide uniform valuations in order to levy government taxes.



Lough Foyle Baseline



Framework of triangulated points in Ireland

Lough Foyle Base Towers



South Base Tower, Ballykelly

To preserve the baseline, the government acquired three base towers that can still be seen today. A fourth base tower was situated at Mounksandy, but has since been claimed by the sea.

ACCESS

The North Base Tower at Ballymullolland and Minearney Base Tower are surrounded by private land and are not readily accessible to the public. The South Base Tower is situated at the rear of the King's Lane Estate in Ballykelly and can be visited.

PERIOD
C19th
GRID REFERENCE
G6347 2215
TOWNLAND
Mulkeeragh

Flush Bracket OSBM 3301: Draperstown, St Columba's

[Http://www.geograph.org.uk/photo/2309587](http://www.geograph.org.uk/photo/2309587).

Location

Grid reference: H 78295 94766.

Discoverer 13: The Sperrins.

Structure: Church / Chapel.

Waypoint: FL3301.

Neighbouring Flush Brackets

3302 Draperstown, Presbyterian Church 189.79m to the southeast.

3303 Straw 2.03km to the southwest.

3300 Draperstown Road 2.07km to the east.

3304 Sixtowns Road 3.75km to the southwest.

3517 Ranaghan, St Eoghan's School 4.65km to the northwest.

The nearest fundamental bench mark is Coleraine, 34.97km to the north.

If you have any corrections or additions to this record, please let us know.

Enthusiast interests in seeking out levelling marks and triangulation pillars of the OS of the 1930s-1960s.

<http://www.bench-marks.org.uk/>

<http://www.trigpointing-ireland.org.uk/>

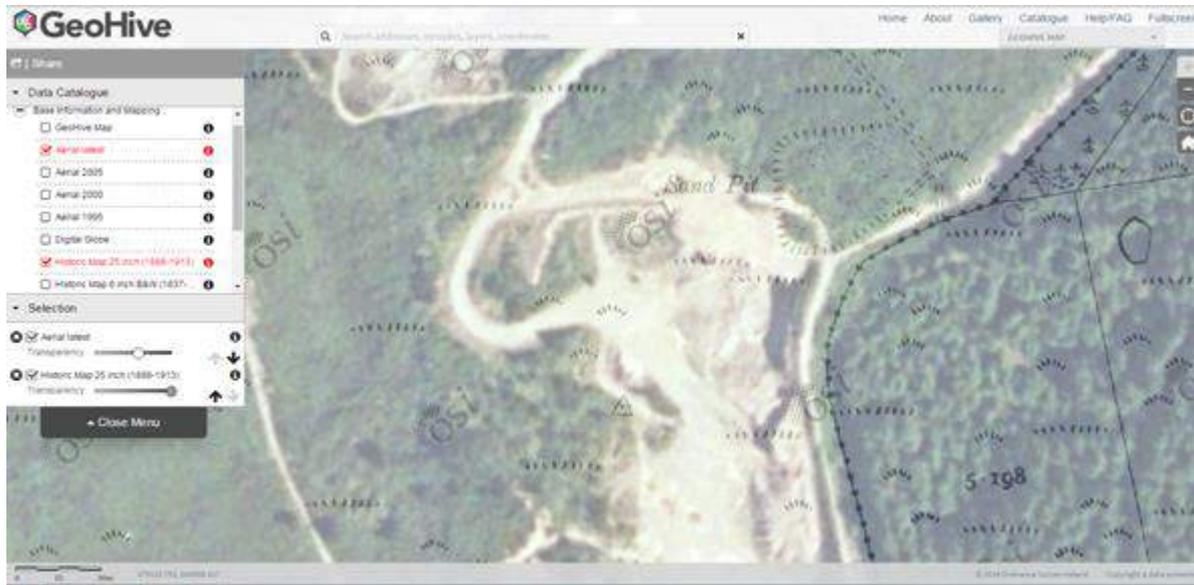
Earlier OS heritage overlooked?



Losing survey heritage—heritage at risk

Knocknaskagh, 1831, “in the north of the county of Cork, is about 3 miles south-west of Rathcormac, a village situated on the road from Cork to Fermoy. The station is on the eastern spur of the mountain, which slopes away from this point in a south-west direction, and extends to a distance of about 3 miles. In the immediate vicinity of the station the mountain has a thin covering of peat moss, but without any heath. The centre stone is a piece of sandstone, having a hole about three quarters of an inch deep in its smooth upper surface, and placed about 24 inches under the surface, over it is a pile about 8 feet high. The remains of the old cookhouse are about 100 yards north-east of the station; and from the circumstance of there being a little turf or heath where it was built, it is likely to remain a permanent object”.







Sandy Mount Base Tower, lost to the sea (image: Conor Graham)

Next steps in 'Mapping Monuments' ...

1. Undertake desk-top studies and site-surveys of early OS archaeology in our nations and landscapes to:
 - Identify and characterise the remains of OS structures and features;
 - Record and evaluate condition and create interpretative materials;
 - Re-evaluate the 'history' of the OS 'in the field'.
 2. Develop community heritage project in anticipation of bicentenary of Trigonometrical Survey of Scotland/Ireland:
 - Mark our nations' contributions to history of science and geography;
 - Crowdsourcing and 'Surveying the Surveyors' outreach project;
 - Publicise protection and recognition of survey heritage and sites.
- **Interested? Join us for our 'Mapping Monuments' online workshops in 2021!**

“Mapping Monuments” Project

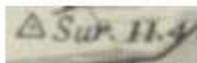
Surveying the Surveyors—Recording Field Monuments of the OS

An easy guide to using the NLS for OS research

Ordnance Survey (OS) maps contain a wealth of information on the field sites and monuments created by the OS. Many of these historic OS maps are now available online to view for free thanks to the National Library of Scotland (NLS) (<https://www.nls.uk/>). This short guide explains how to use the NLS online OS maps and the historic map-layers that have been georeferenced. The guide designed to help use NLS map resources to aid researching the trigonometrical stations and benchmarks marked by large-scale OS maps.

Which OS maps to use?

For the earliest OS trigonometrical stations created in the early-19th century, use the link here to study the ‘diagram of principal stations’ which shows their locations—<https://maps.nls.uk/britain/rec/4139>



You can also explore other maps for other stations, for example those near you. Look for the trig station symbol of the triangle with a dot inside as shown by the example here from the 1st ed *Six Inch* series. OS benchmarks are noted on the maps by the abbreviation B. M. and a ‘crow’s foot’ symbol that imitates the cut mark:



How to use NLS Georeferenced OS maps:

1. Connect to maps.nls.uk
2. At the main menu, click on the words **Georeferenced Maps** from the main menu box (currently second row on left)
3. You will be taken immediately to a help screen. When finished reading click on the X in top right to close the screen. You can prevent this screen appearing by clicking on ‘Don’t show this popup box again’ at the bottom right.



4. Select your area and map to investigate using the box on the left:

- Type placename or grid reference. Note for very rural areas, you will need to use the nearest main placename and navigate your way around. Once you select the placename from the list, you will be zoomed to the location.
- Choose your historic map from the box on the left.
 1. It is a good idea to click Scotland to limit options.
 2. **Select a map/ map series** from the list of options, by clicking on the v in the box. OS Six Inch, 1843-1882 will give you the 1st OS maps while OS Six Inch, 1888-1913 will provide the 2nd ed.

5. Select the modern map / aerial photo layer by clicking on the background lists at the top left of the map in the box saying **Background Map**. It usually defaults to Background map – ESRI World Image. Click on the v symbol to see a list of other options.



6. Click + or – blue symbol at top left to zoom in or out



7. Note the grid ref box on the bottom right. As you move the cursor around, it provides the grid ref where the mouse is pointing. The first line provides the reference with map sheet reference. The second line provides this grid reference in its numeric form, with the first 6 numbers the easting and the second 6 numbers the northing. You will need these for your recording form.

8. If you want to change the view to a modern aerial photo (see step 5), in the left hand box towards the bottom there is the option **Change transparency of overlay** with a blue dot below the text. Click and hold on the dot and move it to the left to show the selected background. You can move back and forth between views. Note that the maps main menu offers the option to view these side by side if you prefer.

You can change historic map and background views (see steps 4 and 5) by clicking on the v symbol in the box. This allows you to check easily for differences between 1st and 2nd edition maps.

If you get lost or in a muddle, go back to Maps home (under National Library of Scotland logo) and work your way through the options again. Other maps may also provide information – plenty to explore on the NLS site.

Have fun!

**ARCH and Heritage Hub “Mapping Monuments” community workshops online—
Jan 25 and Feb 22 (7.00-8.30pm), more inf at <http://www.archhighland.org.uk/>**