INTERNATIONAL MAP COLLECTORS' SOCIETY

IMCS JOURNAL

JUNE 2019 No.157



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Front cover **Detail of 'Geological Map of the E. Part of Yorkshire' by John Phillips published in Part I of *Illustration of the Geology of Yorkshire* [...]. Courtesy of the Geological Society of London.**

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A LETTER FROM THE CHAIRMAN

Hans Kok

It is said that younger people are losing interest in early maps, presumably caused by the internet and the lack of history and geography lessons taught at school. Such statements are not very useful, even if there is some truth in them. If we do not accept modernisation of school programmes, we would need to extend the years spent in education. The internet is not necessarily at fault either though it is certainly a treasure trove of knowledge. While some may doubt the accuracy of Wikipedia, I know that many people consult it without voicing any reservation afterwards. The worldwide web is easily accessed promoting the feeling that 'when I want to know about it, I will go look for it'. It is unlikely though that we will ever look for a topic we have never heard of. Interest in cartography varies between age groups and nations worldwide, so we might be well advised to delve into the background for a better understanding of this phenomenon.

We might agree that a certain measure of knowledge of history and geography, in combination with maturity and available spending money are required to enjoy collecting maps, and some sense that we might learn from the past, would certainly help.

Map collecting is not about acquiring the finest and most expensive. There is satisfaction to be had also from collecting cheaper maps of times and regions that we may be acquainted with. Lack of time and greatly increased prices do not really promote sophisticated map collecting. Greater affluence later in life may enable collection of precious maps of faraway places that an earlier modest ambition may very well have triggered.

A severe drop in prices for early maps occurred in the last decades. I attribute this mainly to too many sales between dealers rather than from dealer to collectors. The last in the dealer-to-dealer chain got stuck with the map. When prices skyrocketed and sales stopped dealers found themselves overstocked. Collectors and institutions were facing unattainable prices and switched to internet and online sales or chose to collect cheaper maps of more recent origin without any art history embellishment (19th and 20th centuries) or other less 'esteemed' categories. Some started a digital collection instead (Stanford University) or moved camp, investing in collectables, such as modern art. Remarkably, never has the output of cartographic publications been higher nor do exhibitions on cartography suffer from a lack of visitors. A great deal of research is currently aimed at using old maps to better understand landscape development and city planning of past centuries. The researcher, curator, dealer, collector chain is still at work.

While interest is there, collectors need not despair; IMCoS has a stable number of members from all these categories, but re-directing our focus to employ a different interest in the same 'old stuff" may be in order!

PS. I do hope to meet many of you during the London Map Fair on 8 and 9 June at the RGS.

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Frederik de Wit, 1660

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Christopher Saxton. *Somersetensem Comitat (agri fertilitate Celebrem) hec ob oculos ponit*, [1579]. Sold £4500.00 (June 2013).

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WELCOME TO OUR NEW MEMBERS

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International boundaries, World maps, Middle East, North Africa, Israel, Palestine

Eric Borgstrom, USA

Phillip Koyoumjian, USA

Jacqueline Langford, Australia
Arabia & Australia

Audun Mikalsen, UK

Dr Bob Silvester, UK
Estate maps, mapping Wales & Border counties

Mark Smith, Australia
Tasmania, Sumatra, Dieppe

Laura Townsend, USA
British Isles, maps of Mesopotamia/ Middle East

PHOTOGRAPHERS

The Society has been well served for decades with an excellent and dedicated photographer in David Webb, a long-time member of IMCoS. David has attended almost all IMCoS events and his photographs are testament to the enthusiasm that he brings to the Society.



Are there any members, handy with a camera, who would like to support David at upcoming IMCoS functions?

If so please contact me on tel: **+44 (0)1799 540 765** or email: **ljiljana.editor@gmail.com**



EDITORIAL

Ljiljana Ortolja-Baird

Old maps serve multiple purposes beyond filling the drawers of collectors. They are valuable as source material for research in fields of history, geography, art history, architecture and town planning and literature; they serve to settle border disputes and rights of way; and inspire artists to imagine new worlds. To this panoply we can add mountaineering.

Mountaineers, weary of the too well trodden paths of the Himalayas, are searching through old maps to find those less travelled. Accounts and sketch maps of early twentieth-century climbers are informing today's climbers, looking to retrace the routes of their predecessors.

New Delhi publisher Roli Books recently published *Legendary Maps from the Himalayan Club* to commemorate the 90th birthday of The Himalayan Club and its journal, which, since 1928, has followed its mission 'to encourage and assist Himalayan travel and exploration, and to extend knowledge of the Himalaya and adjoining mountains'. Major Kenneth Mason of the Survey of India was the editor of the club's journal between 1928 and 1940. During his twelve-year period at the helm he published accounts of multiple expeditions into the Himalayas by pioneer climbers such as Tom George Longstaff, John Hunt, Giotto Dianelli, J.O.H. Roberts, H.W. Tilman, Andre Roche, A. Lohner, A Sutter and E. Feuz. Their expeditions are inspiring those being planned today. And what astonishes many is the accuracy of the old maps notwithstanding the changes which have occurred in the magnetic declination and the gradual drift of the North Pole over the intervening years. In addition to indicating routes travelled, the maps often mark those attempted by other expeditions, heights achieved by earlier climbers, locations of camps, contours of mountains and temples and villages passed.

Various mountaineering organisations are also looking at old maps in an attempt to help locals secure work. The Nada Devi Sanctuary area, a glacial basin surrounded by a ring of peaks between 6,000 and 7,500 metres high (including Nanda Devi, India's second highest peak) is today a national park and biosphere reserve, and home of the Bhotiya people. Mountain Shepherds, a community-owned and operated ecotourism company, has designed a trek that traces the footsteps of legendary explorers Eric Shipton and Bill Tilman who, in 1934, found a climbing route through the Rishi Gorge which gave them access into the glacial basin, an achievement described by contemporary climber Hugh Rutledge as more difficult than reaching the North Pole. The Bhotiya have been trained as guides to lead parties along this challenging route.

The sketch maps and their accompanying accounts are an invaluable record of early exploration of the Himalayas and can be viewed online in back issues of *The Himalayan Journal* (www.himalayanclub.org/).

IMCoS MATTERS

DATES FOR YOUR DIARY

14–19 July 2019
Amsterdam, The Netherlands
28th International Conference on the History of Cartography (ICHC)

As there will be no IMCoS Symposium this year, we recommend, for those in need of an annual immersion in the history of maps and mapmaking, attend the ICHC conference in Amsterdam in July.

The conference offers a packed programme of illustrated lectures, presentations and exhibitions. A post-conference tour of Enkhuisen is also available to book. The event starts on Sunday and finishes on Friday with some fifteen speakers per day. A detailed conference programme (online and hard copy) listing all the lecture titles with their abstracts will be available, so you can pick and choose which events to attend and which to miss in favour of some general sightseeing. Additionally, day passes are available once the programme has been finalised. Please check the website regularly for updates (https://ichc2019.amsterdam/).

The conference title is **Old Maps, New Perspectives. Studying the History of Cartography in the 21st Century**. Speakers will address some of the following themes: the production and circulation of maps in the past; multifunctional and multimedia maps; maps in the digital world; maps and water.

Complementing the conference there will be specially curated map exhibitions at the Stadsarchief Amsterdam (City Archives); Koninklijk Paleis (the Royal Palace); and at Het Scheepvaartmuseum (National Maritime Museum).

Conference fees:
Regular conference fee: 370 euros
Student rate: 120 euros
Accompanying persons: 150 euros
Farewell dinner Friday 19 July: 100 euros
Tour to Enkhuizen 20 July: 120 euros
To register, please go to https://ichc2019.amsterdam/registration

There has always been a good sprinkling of IMCoS attendees at past ICHC conferences and we hope that in the absence of an IMCoS Symposium you will pencil this event in your diary.

5–6 September 2019
IMCoS Visit to Oxford

Members of IMCoS are invited to join us for a two-day visit to Oxford on Thursday 5 – Friday 6 September this year.

Please note that the programme has a limit of thirty people so early booking is advisable. Additionally, the first segment of the visit to Christ Church Library is limited to twenty-five members. Those who book after that number has been reached could visit the Christ Church Picture Gallery which is adjacent to the library. It is home to an important collection of Old Masters. The internationally renowned drawings collection is regarded as one of the most important private collections in the country and includes works by Leonardo, Michelangelo, Dürer, Raphael and Rubens. For more information on the gallery see www.chch.ox.ac.uk/picture-gallery/christ-church-picture-gallery

Thursday 5 September

Aim to arrive around midday in Oxford so that you can leave any overnight bags at your accommodation. This is very important as Christ Church will not allow bags to be left on their premises. Left luggage facilities are available at Oxford's Visitor Information Centre on Broad Street.

2 pm Meet Valerie Newby at Christ Church at the Porter's Lodge by the Tom Gate entrance on St Aldgates (under the big tower). We will walk over to the library as a group. The library contains one of the largest collections of early printed books in Oxford outside the Bodleian Library. On this visit we will be able to inspect a selection of their maps and atlases.

5 pm A reception will be held at Sanders of Oxford, Antique Prints and Maps. 104 High Street, OX1 4BW.

7 pm A group dinner at Quod Restaurant, 92–94 High Street, Oxford OX1 4BJ. Please note this is voluntary and at your own expense.

Friday 6 September

9.45 am Meet in Blackwell Hall, Weston Library, Broad Street, Oxford OX1 3BG outside the café.



Fig. 1 Christ Church Library in Peckwater Quad. Built between 1717 and 1772, and believed to be designed by architect and Tory politician George Clarke. By permission of the Governing Body of Christ Church, Oxford.



Fig. 2 The Upper Library houses some of the college's special collections. By permission of the Governing Body of Christ Church, Oxford.

10 am Nick Millea (Map Librarian, Bodleian Library, Oxford) and Jerry Brotton (Professor of Renaissance Studies at Queen Mary University of London), co-curators of the exhibition *Talking Maps* will give us an exclusive illustrated talk about the exhibits. This will be held in the lecture theatre of the Weston Library.
11 am We will split into two groups for viewing the exhibition which includes the famous Gough Map, the Marshall Islands Stick Chart, maps of Oxford, Islamic cartography and much more.
Lunchtime A sandwich lunch (included) will be available at Wadham College, Parks Road, near to the exhibition venue.
2 pm Our annual **Collectors' Meeting** will be held in the Moser Theatre of Wadham College. The event will be hosted by Francis Herbert, retired Curator of Maps at the Royal Geographical Society. Members should bring their maps for discussion or identification. For convenience you may prefer to bring images of your map/s on a USB stick. We will finish at about 5 pm.

Accomodation: You will need to arrange your own accommodation but as it is vacation time there should be availability in one of the colleges or you may prefer to stay in one of the city hotels. Information and booking for college accommodation can be found at www.universityrooms.com
Travel: Trains operate regularly from London Paddington Station or London Marylebone; from Gatwick and Heathrow airports you can take the Airline coach service directly to Oxford. If you are driving please be aware that parking in Oxford is extremely limited, however, dotted at the perimeters of the city are several Park and Ride facilities where cars may be left for up to 72 hours.
Cost: Cost per person is £35 and payment can be made on our website (www.imcos.org) or by contacting Peter Walker (financialsecretariat@imcos.org). Cheques should be made out to the International Map Collectors' Society and sent to Peter Walker at 4 Beck Road, Saffron Walden, Essex CB11 4EH or credit card payment can be made online at our website. Further information: Valerie Newby (valerie.newby4441@gmail.com) and Jennifer Harvey (jeh@harvey27.demon.co.uk).



Fig. 3 A mandala from the Jain faith representing the universe. The author is unknown. The mandala probably dates from the 17th – 18th century and is believed to be from Northern India. Such maps were displayed in temples as spiritual guides for the faithful. This item has never been publicly displayed before. Bodleian Libraries, University of Oxford.

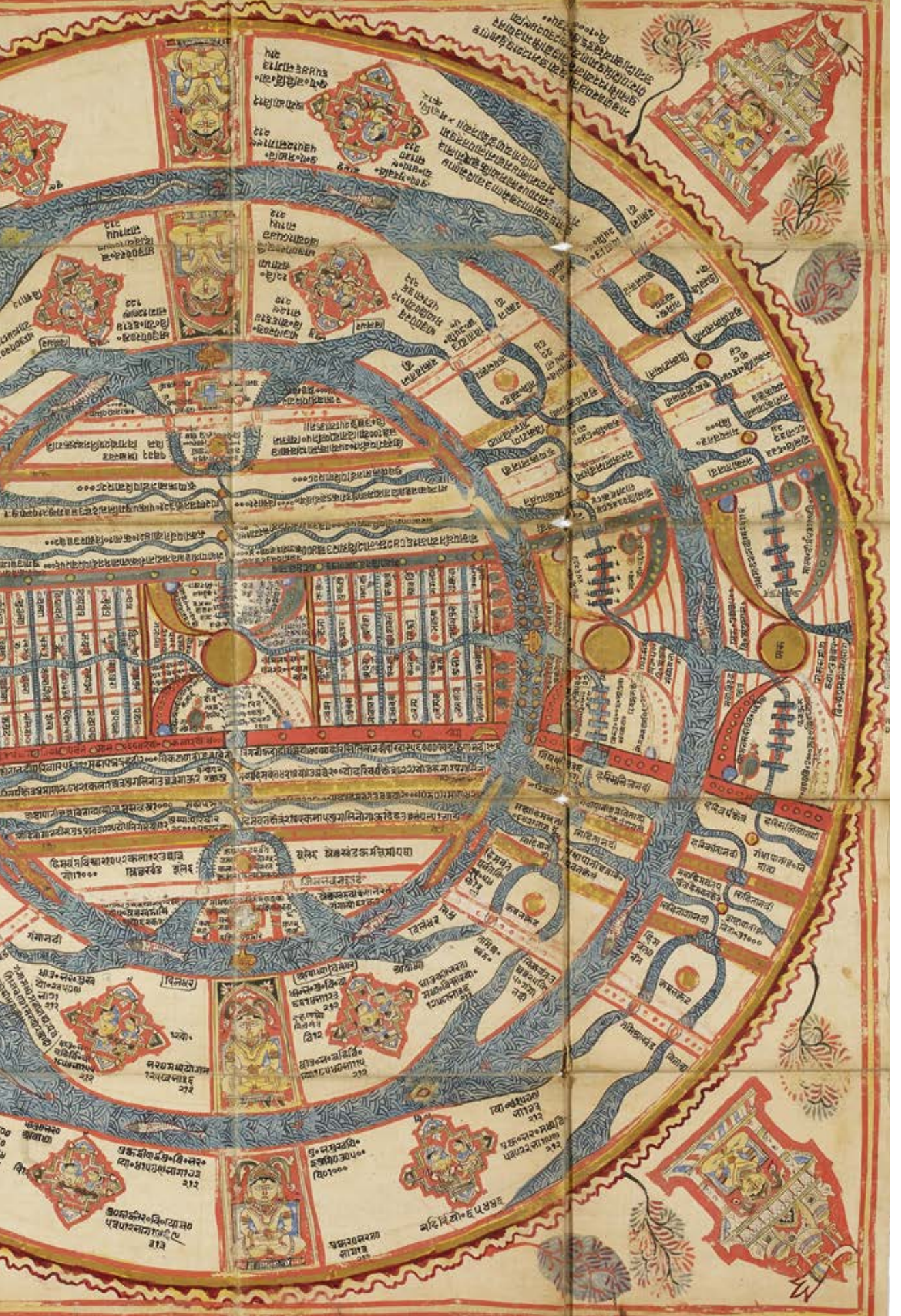




Fig. 1 A group portrait of the geological elite attending the 1838 meeting of the British Association for the Advancement of Science in Newcastle, by an unknown artist. John Phillips is in the foreground examining a fossil jawbone. Behind Phillips from the left are: Roderick Murchison (2nd Director General of the Geological Survey); Richard Owen (founder of the Natural History Museum); unknown with hearing trumpet; below trumpet, Henry De la Beche (founder and first Director General of the GS in 1845); Adam Sedgwick (Cambridge professor of geology); Charles Lyell, author of *Principles of Geology* and much else, in the centre. In the group to the right, from the left: William Fitton; William Buckland (Oxford reader of geology); unknown; and William Smith who produced the first geological map of England and Wales. Reproduced by permission of the Geological Society of London.

JOHN PHILLIPS (1800–1874)

The introduction of lithography in geological mapmaking in Great Britain

John Henry

Over the course of the nineteenth century, the process of geological mapmaking progressed from hand-coloured engraved maps to colour lithography, also known as chromolithography. The remarkable career of John Phillips, nephew of William Smith (1769–1839) the 'Father of English Geology', encompassed the major part of this period of geological mapmaking and illustration. While not a major player in the field of printed illustration and mapping, his story is a vignette of the progress of lithography in the 1800s in Great Britain.

Lithography

Unlike engraving which requires lines or marks to be cut into a hard surface to hold the ink, which then is transferred onto paper, lithography uses greasy inks or crayons to draw the map or figure directly onto the flat printing stone surface. The process relies on the fact that oil and water do not mix. During printing, while the stone is kept wet, the inked area of the stone transfers directly to paper pressed against it. The fine porosity acts as an ink reservoir to a shallow depth. When the stone is re-inked, the ink goes only to the area of the drawing and not to the wet area of the stone. When the image is no longer required, the thin ink-retaining layer can be removed by grinding and the stone re-used. Printers rented blank stones to artists and mapmakers, who drew their images with pen and greasy ink and/or crayons.[1]

For the process to work a rigid absorbent surface was required which was where the stone came in initially. The stone had to have a fine grained uniform surface that did not affect the drawing or the ink transfer processes. Later, zinc and steel with appropriate coatings were used; they reduced the weight and, in time, were wrapped around cylinders to speed the printing process.

Conceptually, from the artists' and mapmakers' viewpoints, lithography – writing or drawing directly on stone – enabled more immediate and fluent work.

Alois Senefelder (1771–1834) discovered the concept of lithography in 1796. He was living in Ingolstadt, north of Munich and 20 km southeast of the Solnhofen limestone quarries.[2] As a struggling playwright, Senefelder was looking for an economical way to print his plays. As a cheap substitute, for copper, the usual material for engraving, he was experimenting with engraving the flat limestone slabs from a local quarry. The popular story goes that while experimenting with etching letters into Solnhofen stone, he wrote a hasty laundry list for his mother in crayon on the stone. Later, on washing the stone clear of the list, he had a eureka moment. He observed that the crayoned note persisted and attracted ink while no ink attached itself to the wet stone around the crayon marks. He realised that he could print by pressing paper against it and that engraving was completely unnecessary. He experimented to make the right greasy crayon and ink solution and to find the best method for applying the paper to stone. By 1796, he had perfected the technique sufficiently to begin publishing sheet music with composer and publisher Johann Anton André (1775–1842).

Introduction of lithography in Great Britain

Senefelder was careful to establish patents to protect his discovery. The compounds for the greasy ink and for treating the limestone surface were his commercial secret for which he sought patents all over Western Europe; his first was in Bavaria for 'chemical printing' in 1799. He received his fourteen-year British patent for 'polyautographic' printing on 20 June 1801. Johann André's youngest brother, Philipp André (no dates found), moved to London to hold and exploit the patent;[3] he imported the Solnhofen stone and used Senefelder's polyautographic ink. He held the patent until 1805, when he was succeeded by his assistant, G.J. Vollweiler (no dates found), until August 1807 when he also returned to Germany. There appeared not to be enough business, as no one followed Vollweiler.[4]

Antiquarian Thomas Fisher (1772–1836), writing in *The Gentleman's Magazine*, in March 1808, sought to change this situation. He argued that the technique involved less work for the artist and produced immediate results. The artist could see what he was

going to get. He could correct errors by wiping away the greasy ink – no engraved line to fill or hammer out. The process handled shading with crayon as well as hard ink lines equally well. The printer could produce many more good copies. Fisher believed that early criticism by artist Landseer and engraver T. Smith, while the art of polyautography was still immature, had held back its take-up. Before returning to Germany, Vollweiler told Fisher that stone of nearly similar quality could be found near Bath.[5]

When Vollweiler returned to Germany, he sold his lithographic press and stones to the Quarter Master General's Office in Whitehall.[6] David Redman (no dates found), who had worked for Philipp André and then Vollweiler, moved to QMGO on Vollweiler's departure. In 1813 he left QMGO to set up in Bath as an independent lithographic printer, near the English source of a comparable stone to the Solnhofen limestone, and near an artistic community and a well-to-do market interested in the arts.

The right sort of stone was the White Lias as named by William Smith. Henry Bankes (1757–1834) in his book of 1813, *Lithography; or, the art of making drawings on stone, for the purpose of being multiplied by printing* introduced the term lithography into the English language. In it, he wrote:

> *The stone first brought into this county by Mr. André, was supposed to be peculiar to Germany; but it has since been discovered that it is precisely the same as White-Lias, or Layer, found in such great abundance in the immediate neighbourhood of Bath, being the stratum lying under the blue-lias, or layer, which is used for burning into lime, paving the streets, and coarse walling. The white-lias is not so favourable for any of these purposes, and is therefore thought of very little value, except where the other cannot be got.*
>
> *For the purpose of Lithography, however, no other stone is so eligible. Its application to this art, therefore, will give it a new value, and claim for it a greater share of attention. It takes a very good polish, is compact, fine grained and absorbent of water.*[7]

Bankes's *Lithography* was the first work in English but lacked detail about the ink formula. In the absence of specific copyright-protected information about the formulation of the inks and crayons for the lithographic process, there was considerable experimentation. As his various European copyrights lapsed, Senefelder published *Vollstandiges Lehrbuch der Steindruckerei* in 1818 (A Complete Course of Lithography) which was translated into English and French in 1819.

John Phillips

At the age of eight, Phillips, with his younger sister and brother, was orphaned. The children were taken into the care of his mother's brothers, William and John Smith. In November 1815, upon completing his schooling, he moved to live with his uncle William at 15 Buckingham Street, just off the Strand in London. He was almost fifteen, well-educated and very capable.

In the previous year he had lived near Bath with a good friend of Smith's, Rev. Benjamin Richardson (1758–1832),[8] who was generally knowledgeable about natural history, and collected fossils. Phillips had the run of a large well-stocked library and met many of Richardson's associates in Bath. Young Phillips spoke and wrote French and Latin, was proficient in drawing, the use of a microscope and was by nature an observer. Smith was in the midst of producing his great map, *A Delineation of the Strata of England and Wales, with part of Scotland,* checking and correcting copies brought to him from John Cary's establishment on the Strand.[9] At the same time, he was preparing to sell his immense reference collection of fossils to the British Museum in order to meet his debts. Phillips was immediately set to work describing, sketching and listing Smith's fossils for a catalogue to accompany the collection.[10] Phillips had landed on his feet and was a godsend to his uncle.

From this start as the 'first geological apprentice',[11] Phillips's career can be traced through early opportunities as a curator of York Museum and secretary of the British Association for the Advancement of Science, through lectureships at University College London and Trinity College, Dublin, as palaeontologist for the Geological Survey, finally to become professor of geology at Oxford and founder and curator of Oxford University Museum of Natural History. Throughout he was a prolific writer.

Phillips's career coincided with the invention of lithography and its development. Lithography reduced the need for skilled engravers and opened up the possibility for more illustrations and maps in publications thereby reaching a wider audience. From his youth Phillips was acquainted and experimented with and experimented with, the evolving technology. Throughout his career he was aware of the great utility of lithography in communicating geology through illustrations and maps in his numerous publications.

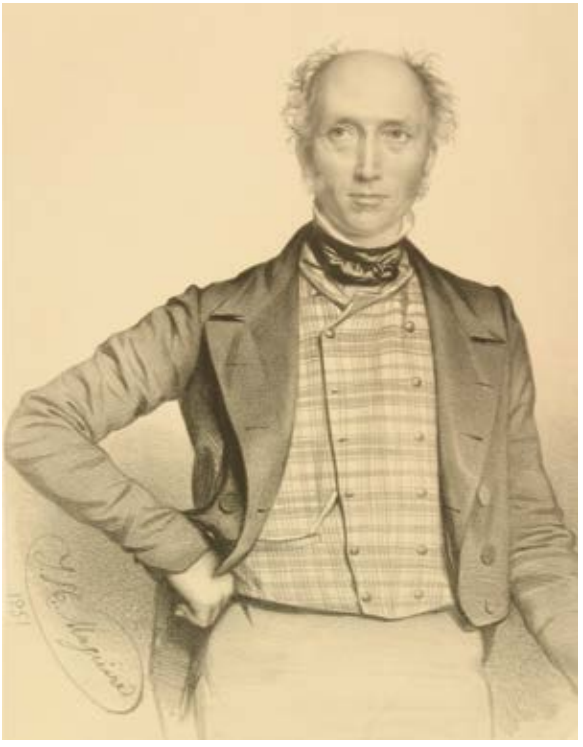


Fig. 2 Portrait of John Phillips, aged 51. Lithograph by Thomas Herbert Maguire (1821-1895) issued on the occasion of the 1851 meeting of the British Association for the Advancement of Science in Ipswich. Reproduced by permission of the Geological Society of London.

Phillips's early lithography

Phillips, during his year with Benjamin Richardson in 1814, may have met David Redman in Bath; a John Phillips, esquire, and Rev. Joseph Townsend were listed as subscribers to Thomas Barker's *Forty Lithographic Impressions of Rustics* printed in Bath by David Redman in 1813.[12] Certainly, Redman printed a map for Phillips in 1818, as discussed below.

Arriving at 15 Buckingham Street, Phillips found himself in the neighbourhood of the Strand, a centre for book and map selling, engraving and printing in London.[13] Aware of his uncle's financial insecurity, he looked for ways not only to be useful to his uncle but to learn a skill that might earn money. Lithography presented an opportunity. He was not unfamiliar with the concept and his new neighbourhood presented examples. Until Senefelder's publication, the recipe for the inks had to be discovered by experimentation. Phillips began experimenting in 1817 and his notebook shows that he was careful and observant in his trials. His comments indicate that he referred to the 1816, second revised, edition of Bankes's work, retitled *Lithography; or, The Art of Taking Impressions from Drawings and Writing Made on Stone*.[14] He referred to contemporary articles in the *Annals of Philosophy,*[15] regarding recipes for inks and crayons. Lithographic ink was a mixture of warmed Marseille soap, pure mastic, shellac, slowly added to soda and water, mixed and added to lampblack and water. Lithographic crayon was composed of soap, tallow, wax and lampblack.[16] After completing his experiments, Phillips wrote in the introduction to his notebook: 'it is apparent from its [ink's] composition that great room is afforded for minute mistakes which will have the most dangerous effects'.[17] To avoid the need to write in reverse, Phillips experimented with transfer papers, including Redman's transfer paper[18] which enabled a drawing on the paper to be turned over and transferred to the stone.

From this period three similar maps survive drawn by Phillips for consulting reports on a proposed canal south of Leeds by William Smith.[19] Figure 3 shows a 'Plan of the Navigable Rivers and Canals connected with the proposed Air [sic] and Don Canal' dated 1818 and printed by Redman who had located back to London. Phillips drew a second similar but redrawn and extended map in 1819, entitled 'Proposed Aire & Dunn [sic] Canal to drain the contiguous Lands and to shorten and connect the present Navigations'. The second map includes levels and distances, more place names but does not name the printer. However, entries in Smith's diary for 16 and 20 October 1819, later annotated by Phillips, reveals that they collected stone at Womersley, near the canal, and at Dunchurch, Warwickshire for printing.[20] These are both sources of White Lias limestone. Phillips's note reads 'NB 500 Plans Printed from Dunchurch Stone 200 from a Wormersley [sic] Stone'. On a rough draft of the map in Figure 3 Phillips wrote in pencil, 'Womesesley [sic] Oct 1818 J.P. The best'.[21] Evidently his experimentation was extending to comparison of lithographic limestones.

The stones were heavy. They had to be a minimum of 50 mm (2 inches) thick to avoid cracking under the pressure of the press and to allow for a certain amount of grinding off of images to enable re-use. There was much experimentation with the design of presses. Phillips drew sketches of the presses of H. Bank[e]s, Mr. Smith [his uncle], Redman[']s and improvements of his own press 'Aug 1 . . . 1819 now in use'. [22] With financial assistance from Richardson, the press was intended to help Phillips survive while his uncle was in

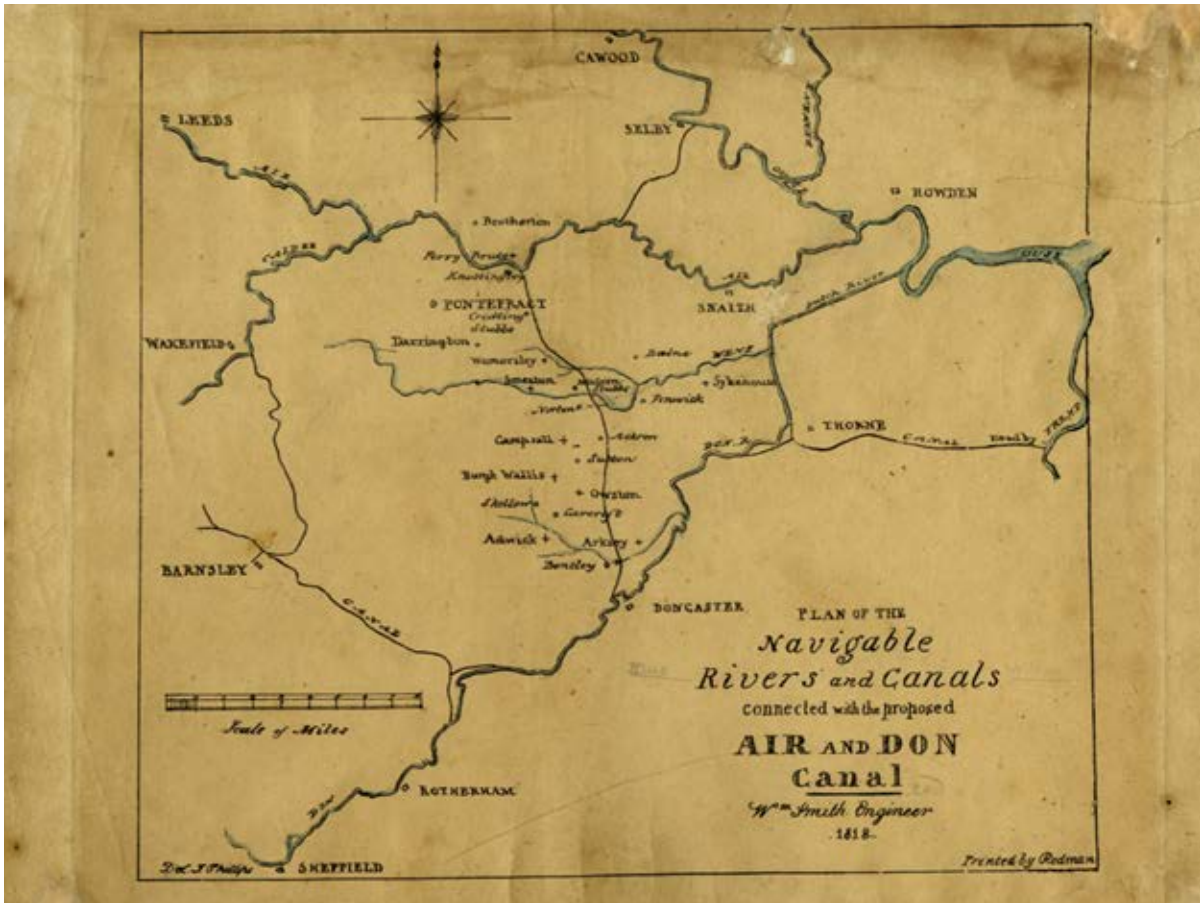


Fig. 3 'Plan of the Navigable Rivers and Canals connected with proposed Air and Don Canal', the first known map drawn by John Phillips in 1818. It is a lithograph drawn on English White Lias stone, the drainage has been hand-coloured. Two other variations issued exist. Courtesy of Oxford University Museum of Natural History. Shelf mark WS/H/2/0/022.

debtor's prison.[23] An advertising bill, the Aire and Don project maps, two sections and several fossil diagrams survive from this period.

Smith's calamitous financial situation forced him and Phillips to leave London in February, 1820. Smith lost his leased house, furniture and most of his books and maps. Although it is not mentioned anywhere, Phillips must have lost his press. They led a peripatetic life of no fixed address moving from job to job in the North of England for several years. Phillips was unable to pursue active lithography, but his experiments:

> *gave him direct experience of the technical difficulties and possibilities of lithography. In later life, when he wrote scientific works, he was frequently his own sketcher and draughtsman and he knew what was technically feasible when he drew illustrations for others to lithograph. At least Phillips' enthusiastic teenage venture into lithography, which endured for over a decade, heightened his awareness of the visual language of science and encouraged him in the future to give full expression to his remarkable visual imagination. The lithographic adventure confirmed his mania for gadgets. Indeed in 1819 the teenaged Phillips became the first in Britain, subsequently distinguished in science, to devise, construct, and use a lithographic press.* [24]

Phillips in Yorkshire

In 1824, while based in Kirkby Lonsdale and working on assignments[25] in Yorkshire and the Lake District, Smith received an invitation to give a course of lectures on geology in York to the recently formed Yorkshire Philosophical Society (YPS). Smith seized the opportunity. Phillips helped his uncle prepare the lectures and gave one himself on fossil shells. After York, literary and philosophical societies in

Scarborough, Hull and Leeds commissioned lectures series. It became apparent that as much as Smith was popular and well liked, Phillips was the better lecturer. In October 1825 he was engaged by the YPS as keeper of its museum to curate the fossils and as a draughtsman. Initially, the position required him three days a week for nine months of the year.[26] The lodge of the Yorkshire Museum became his permanent home. YPS records show that his interest in lithography re-surfaced with the design of a modified press with a small, strong inexpensive frame. He had room and time for other inventions. He developed an improved barometric altimeter for his fieldwork, a new lathe, a blowpipe for chemical analysis, a precise balance, and a hairspring hygrometer. He ground an achromatic lens for his telescope. Throughout his life Phillips was noted for his interest in gadgets.[27] In 1829 he met his sister Anne whom he hadn't seen for fourteen years, and invited her to join him as his housekeeper and companion. She was an accomplished hostess and geological assistant. Neither married, and they lived together until her death in 1862.[28] When the British Association for the Advancement of Science (BAAS) was founded by the YPS in 1831 in York, Phillips became its secretary, a position he held for nearly forty years.

Settled in York, with his uncle secure as land steward at Hackness near Scarborough, the estate of YPS stalwart Sir John Johnstone, Phillips researched and explored all of Yorkshire. He published *Illustrations of the Geology of Yorkshire; or a Description of the Strata and Organic Remains; Accompanied by a Geological Map, Sections and Diagrams, and Plates of the Fossil Plants and Animals*. It was published in two volumes: Part I. *The Yorkshire Coast* (1829) and Part II. *The Mountain Limestone District* (1836).[29]

Plate one of *The Yorkshire Coast*, first edition was a hand-coloured lithograph 'Geological Map of the E. Part of Yorkshire' drawn by Phillips and printed in Leeds by Thomas Inchbold (?-1832) 'for the Author' (Fig. 4a overleaf). In the second edition of 1835, published by John Murray,[30] the map was engraved by John Wilson Lowry and repositioned to be the frontispiece (Fig. 4b on page 17). It was hand-coloured. All of the fossil figures and geological sections were noted as drawn by Phillips but had been engraved and printed by Dawson and Brown of York. The sections were hand-coloured.

A comparison of the two editions of volume one and its geological map reveals a major shift in John Phillips's progress. The first edition was self-published in York and all the figures are lithographs drawn by Phillips. The lettering of the map, sections and fossil plates are all drawn by hand, apparently by Phillips while the same in the second edition, published by a major London house, were engraved by John Wilson Lowry (1803–1879), a prominent engraver in the geological world. From Murray's decision to take on Phillips it is clear that Phillips's initial work was widely valued professionally. By having the illustrations engraved, Murray was making an investment to improve the appearance of all the figures, although the content remained the same. The actual production remained in York with Thomas Wilson and Sons for the text and Dawson and Brown for the map and figures.

The difficulties for printers dealing with colour printing of geological maps were the number of colours and difficulty of registering the colours on separate lithographic slabs given the intricacies of geological boundaries separating the colours. Hand-colouring of geological maps persisted when less demanding colour work had progressed to printing. It took time and quality colouring had a cost. In his second volume, *The Mountain Limestone District*, published in 1836 by John Murray, the colour problem was avoided entirely by using engraved patterns instead for the map and sections. The fine line work and choice of patterns meant that the map was just about geologically legible with, in effect, various shades of grey for the different rock units. It was graphically legible since the text, drainage lines and geological dip and strike symbols were clear against the patterns. This is cartographically difficult to get right, and the avoidance of colour meant that the larger fold-out map was affordable to publish. Nevertheless, it made for a dull map (see Fig. 5 on page 18).

In the next twenty years, Phillips developed his geological career through academia, the new Geological Survey of England and Wales, and as secretary of the BAAS and organiser of its annual week-long conferences in provincial cities outside of London. His output of academic papers was prodigious. His next book, however, falls into the category of, in today's jargon, outreach.

Increasing literacy, railway travel, and shorter working hours (free Saturday afternoons!) created a wider audience which Phillips was interested in reaching. In 1853, again with Murray, he published *Rivers, Mountains and Sea-Coast of Yorkshire. With Essays on Climate, Scenery, and Ancient Inhabitants of the County*. It was intended to be popular, but by modern standards it is not light fare. In it, Phillips pioneered a colour-



Fig. 4a 'Geological Map of the E. Part of Yorkshire'. Hand-coloured lithograph in 1829 first edition of volume 1, *The Yorkshire Coast*, privately published by Phillips. Scale 1 inch to 9 miles / 1:570,000 approximately. Area within the neat line, 23.5 x 18.2 cm. The pencil annotations appear to be by George Bellas Greenough, founder member of the Geological Society, a major map collector and inveterate annotator. Courtesy of Geological Society of London.



Fig. 4b 'Geological Map of the Eastern Part of Yorkshire'. Hand-coloured engraving in 1835 second edition of volume 1, published by John Murray and engraved by John Wilson Lowry. Dimensions and scale unchanged. Apart from elaboration of title and tidying up of place and feature names, there is one revision; Hedon which appears twice in the first edition has been corrected to Hessle, west of Hull on the Humber River, south of which the colouring does not extend. Author's collection.

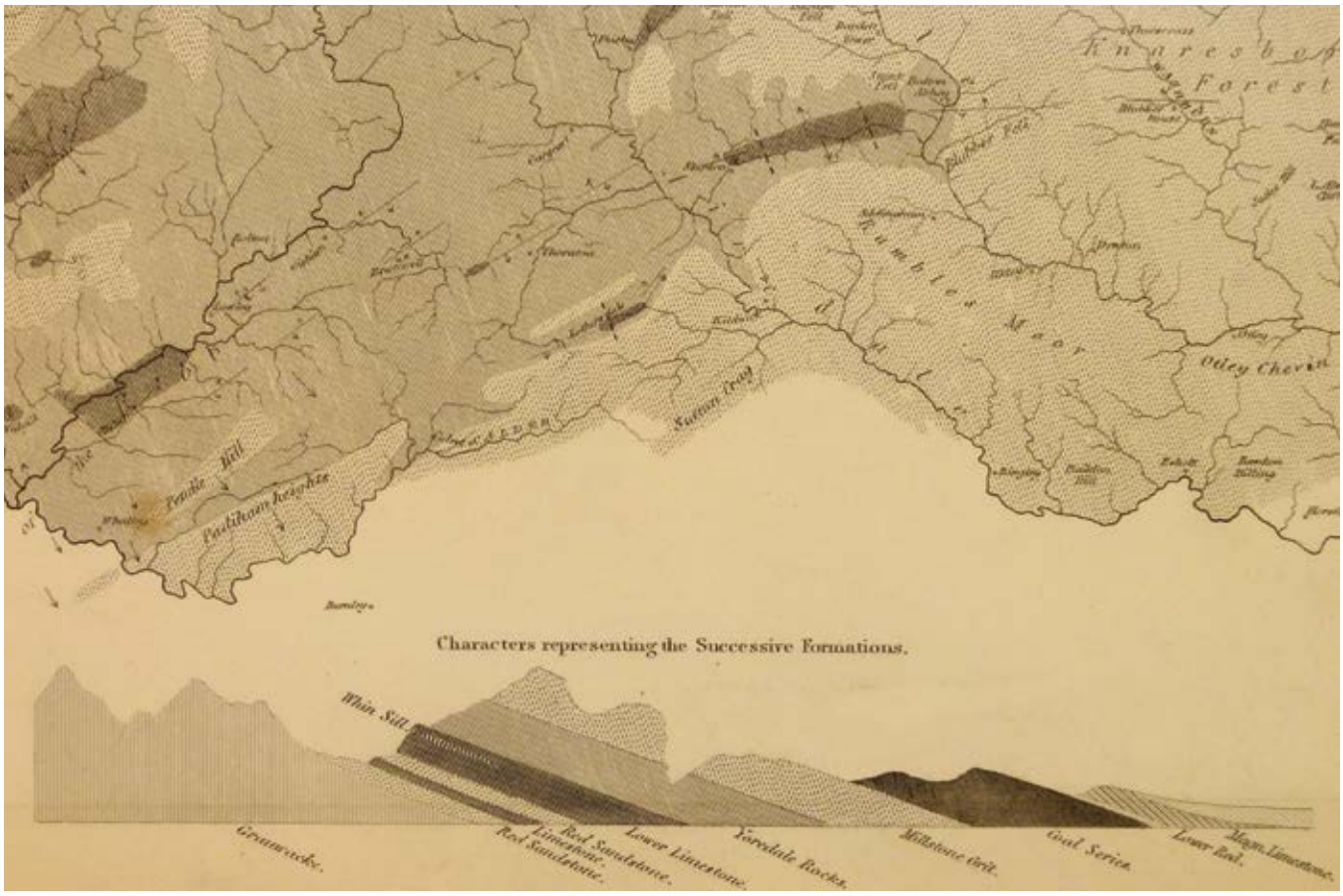


Fig. 5 'The Mountain Limestone District of Yorkshire and Parts Adjacent By John Phillips, FRS, FGS, Prof. of Geol. U.C. London' of volume 2, *The Mountain Limestone*, 1836. Extract from the uncoloured fold-out map engraved by John Wilson Lowry. Scale 1 inch to 5 miles /1:316,800. Area within the neat line, 39.2 x 25.8 cm. Ten engraved patterns replace colours. The labels on the cross section eliminated the need for a legend. The map has much more drainage detail and includes more information: dip, strike and magnetic declination; however, topographic hachuring was omitted, presumably as it was not compatible with the patterns. Author's collection.

printed map, 'Geology of Yorkshire' (plate 30), which is, arguably, the first successful colour-printed geological map in Great Britain,[31] but certainly is the first in England. In the book he advertised a large, folding colour-printed *A Map of the Principal Features of the Geology of Yorkshire* self-published in the same year.[32] There was a subsequent unrevised edition of the book and small map in 1855, and a revised edition of the large map in 1862. William Monkhouse (1812–1896), a York chromolithographer was engaged for all colour work and lithographic printing, John Murray was the publisher; all of Phillips's 'sketches' were redrawn on stone by W. Bevan (fl. 1843–1863).[33]

Phillips had known Monkhouse since at least 1841, when Monkhouse lithographed sixty plates of fossil drawings by Phillips for his *Palaeozoic Fossils*, the first palaeontological monograph published by the Geological Survey.[34] Monkhouse, the first lithographer to establish in York, had set up his first press only the year before, in 1840;[35] Phillips, still residing in York, was quick to encourage a local service. No previous colour work by Monkhouse is known; for the colour printing of Phillips's maps, he was apparently a novice.

It is unknown which sources Monkhouse consulted. His approach was relatively sophisticated using colour overprinting of different colour patterns to increase his palette from a few colours. With oil-based inks, obtaining transparency when combining colours was a difficulty. Technically, he was challenged by the lack of permanent colours. There was little published information available in English: William Savage's publications, *Practical Hints on Decorative Printing* (1822)

and *On the Preparation of Printing Ink; both Black and Coloured* (1832) though neither book mentioned lithography and the ink recipes were very approximate. As well, Godefroy Engelmann (1788–1839) had been granted an English patent for a process of chromolithography in 1837 (personal communication, Michael Twyman).

Several examples of Phillips's small map (1853 and 1855) have been located through the History of Geography Group[36] network, as digital copies online, and in major libraries. Upon examination, there is considerable variation of the colours between the copies from both editions, but particularly the first, although the large folding map appears to be consistent (see Figs 6 & 7 overleaf). Norman Butcher noted these variations when curating an exhibition at the University of Reading in 1967[37] and consulted about the colours with print history specialist, Michael Twyman, who made Butcher's diapositives of thirty-two variants of the small map available to me. Butcher observed that the colour problems were all in the 1853 edition;[38] while generally true, a few examples of colour variation persisted in 1855 edition maps that I have observed.[39]

The colour variations of the small map are inconsistent and suggest experimentation or continuing production problems. As the colours of the large map are consistent and match the colours of the unaltered small maps, we may assume that these were the intended colours. For the larger map (64.4 x 83.5 cm), Monkhouse employed five colours – pink, blue (turquoise), yellow, grey and black[40] – to produce fifteen colour effects by over printing and the use of positive and negative stipple patterns (see Fig. 8 on page 22). The colours represent different rock formations exposed at the surface.

The primary colours of the large map read clearly in terms of the transparency and differentiation of colours, although from a geologist's point of view, it doesn't. By 1853 standard colours had become widely adopted in the British Isles due to the influence of the Geological Surveys of Great Britain and of Ireland.[41] For example, pink reads as granitic to a geologist, and not the New Red Sandstone[42] which it represents on this map. Phillips who worked as a consultant for the Geological Survey would have been very aware of this.

Where the colours of the small map have gone dark brown, this appears to be due to oxidization of the iron in the pink and yellow. This distortion does not affect blue; the shifts from the original turquoise to greens, dark blues or grey sometimes come close to the colours used by the Geological Survey, particularly the darker blues. Initially, it appeared that the experimentation might have been aimed at achieving standard geological colours, but the inconsistencies are more probably the consequence of slight unintended variations in the colour mixing.

The large map did not suffer from the colour distortions of the small map although it appears that the same colours were used for both. That the colour distortions of the small map continued, although to a lesser extent, in the second edition suggests perhaps that differences in paper used may have been a factor. The paper used for the small map is very smooth and lightweight, and more prone to age toning and foxing. The large map is printed on a light porous cartridge paper, while those copies seen were usually age-toned but not foxed.

Phillips's later maps

Phillips moved to Oxford on becoming reader in 1854, then professor of geology. Among his prodigious output of research monographs and journal articles, he produced three major books and was working on a fourth when he died. He changed publishers, briefly to Richard Griffin in Glasgow in 1855, and then to Clarendon Press, which was regarded as taking science seriously.[43]

In 1855, a small 16.5 x 10.5 cm colour lithographed geological map of the British Isles was included as the frontispiece in Phillips's *Manual of Geology: Practical and Theoretical*. The map used four colours – pink, yellow, blue on a black outline to achieve a not very adventurous five colour printing. The manual was volume 32 of the *Encyclopaedia Metropolitana*, 2nd revised edition, published by Richard Griffin and Company of Glasgow and London. It was available as an individual volume. The map was printed by W. & A.K. Johnston for insertion into other publishers' products. With fewer colours it was a less ambitious map, but the larger market for an encyclopaedia over regional geology books was an incentive to persist with a more efficient method than hand-colouring.

Mount Vesuvius was active in 1867; anticipating that the activity might continue and having never witnessed an active volcano, Phillips organised a visit to Naples in the Easter break of 1868 with John Edward Lee (1808–1887) his friend since his early life in York.[44] They made two partial ascents from Monte Somma and Resina; intermittent eruptions of ash and boulders thwarted a complete ascent.[45] On his return to Oxford he gave a course of lectures and rapidly produced


CHESHIRE
DERBYSHIRE
NOTTINGHAMSHIRE



Fig. 6 'A Map of the Principal Features of the Geology of Yorkshire by John Phillips F.R.S.', 1853. Printed by William Monkhouse, chromolithographer, York. Scale one inch to five miles / 1:316,800. Area within and including border 56 x 79 cm. The sections of the small version in figure 6 are absent. All contemporary railways and stations are shown, important for the audience he was addressing. The larger scale enabled many formations to be shown. Solid pink is used twice: in the main body as the New Red Sandstone or Triassic; and as a narrow strip of pink as Red Chalk on the inland edge of the extensive white area, which is Chalk, where it is not stippled. Courtesy of the Duncan Hawley Collection.



Fig. 7 'Geology of Yorkshire', colour lithograph map from *Rivers, Mountains and Sea Coast of Yorkshire*, 1853. The first colour lithographed geological map in England. Scale not given, approximately one inch to 6 miles, 1:380,000. Area within the neat line, 11.7 x 18.7 cm. The map includes three horizontal sections and a vertical column displaying the relative thicknesses of the strata more clearly. Author's collection.



Fig. 8. Details from figure 6 to show patterns and overlaying of colours. The top panel shows the variations of the same blue as solid, negative stipple and positive stipple expressing as dark, medium and light blue. The random nature of the stipple spots indicate that the pattern was made manually. In the right-hand panel, the colours from left to right are: solid yellow; pink negative stipple over solid yellow; pink positive stipple over solid yellow; blue dashes over solid yellow.

Vesuvius, a compilation of his deep reading of the subject of vulcanism and his recent field observations.[46] Published by Clarendon, it was a demanding book aimed at the informed reader and particularly his geological colleagues.[47] Although well illustrated with small woodcuts and engravings inserted in the text, and lithographed plates, it had only map (see Fig. 9). The frontispiece is a fold-out colour lithograph map of Mount Vesuvius by Newbold and Stead of York, successors of William Monkhouse. Five flat colours were used to show 'prehistoric' lava, the lava flows of the seventeenth, eighteenth and nineteenth centuries, and ash. No patterns or combining of colours were attempted; despite this simplification, some copies of this lithograph show severe colour distortions. The separate colour layers have occasional gaps along boundaries and negligible topography apart from the summit and the coastline. The map is also disappointing given the detail of the text.

Two years later Clarendon published Phillips's *Geology of Oxford and the Valley of the Thames.* They reverted to hand-colouring for the frontispiece regional map, a detail map of the Oxford section of the valley and two plates of horizontal sections or profiles. The colours are numbered and captions on three of the coloured plate refer the reader to uncoloured vertical columns on pages 400 and 408 for their identification. The hand-colouring is neat, but the distinct impression is that Phillips was too busy and that his publisher's editorial and production departments were not map readers. The book started out in 1854 with a notional title of *Oxford Fossils*. It evolved in 1869 to *Geology of Oxford and its Neighbourhood*, before settling on its published title.[48] This evolution is telling, for over two thirds of the text consists of detailed descriptions of fossils and their outcrop locations. Phillips acknowledged the work of the Geological Survey geologists, their maps and reports. He appears to have assumed that readers were using the published one-inch maps of the Geological Survey, but nowhere does he specifically refer to relevant maps, by either sheet number or with an index map.

Phillips's final publication was a revision of his first book, *The Yorkshire Coast,* which was posthumously published in 1875 by his old publisher John Murray. Phillips had been working on it for three years before his death. It was completed by his colleague Robert Etheridge (1819–1903). The map was not revised.

Conclusion

John Phillips's involvement with lithography paralleled its development in Great Britain. His early interest and research in it, initially pursued as a career possibility in financially dark times, exhibited his fascination with the new technology. He used lithography for his illustrations in an early self-published first volume on Yorkshire's geology in 1829 and the first edition map of the geology of Yorkshire's coast was a lithographed base with hand-colouring. Colour lithography did not exist in Great Britain at this time. For the second edition of the first volume his publisher, John Murray, in an attempt to improve the book's quality issued the map of coastal Yorkshire as a hand-coloured engraving. For the first edition of the second volume, Murray avoided colour with a larger scale engraving using

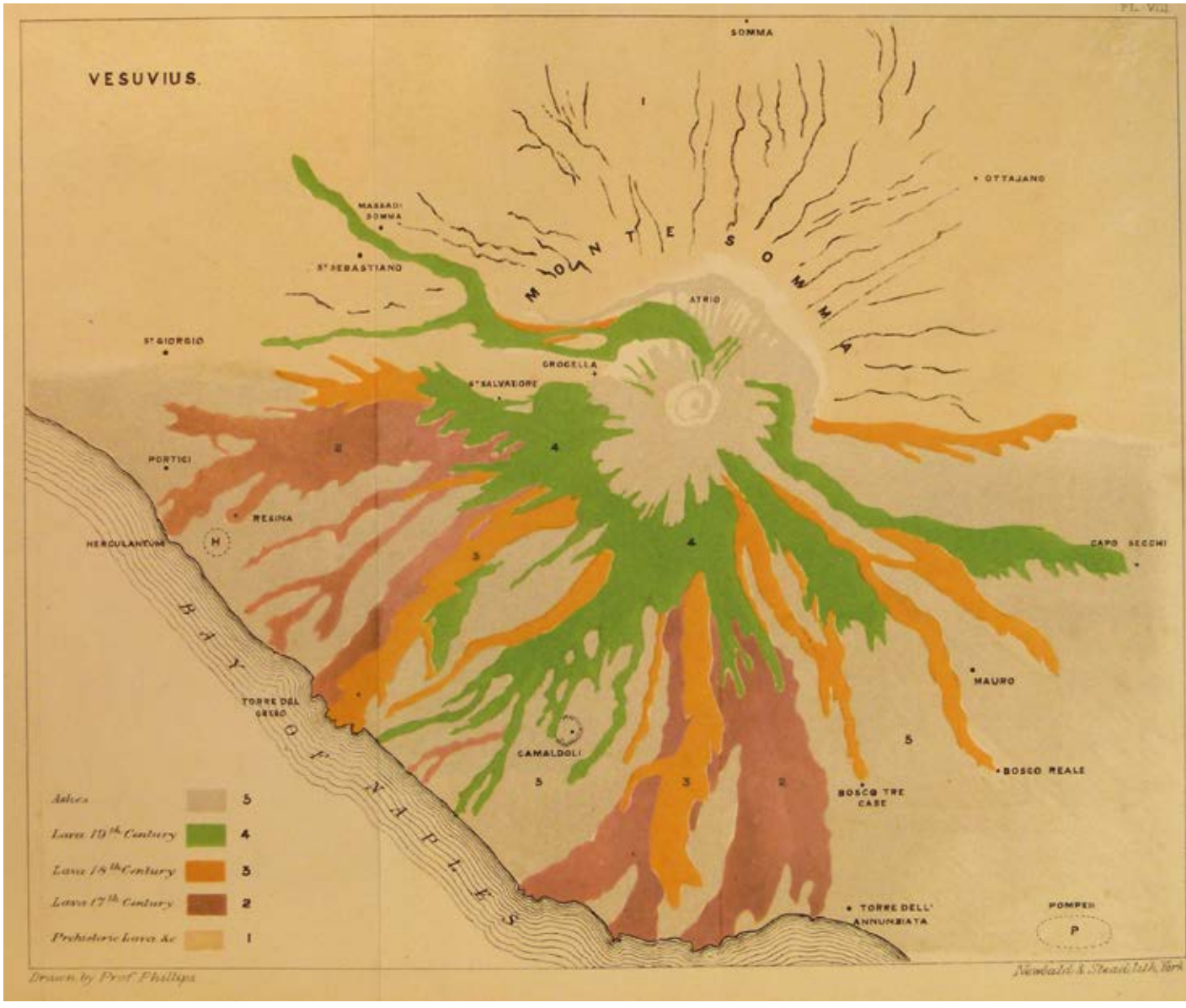
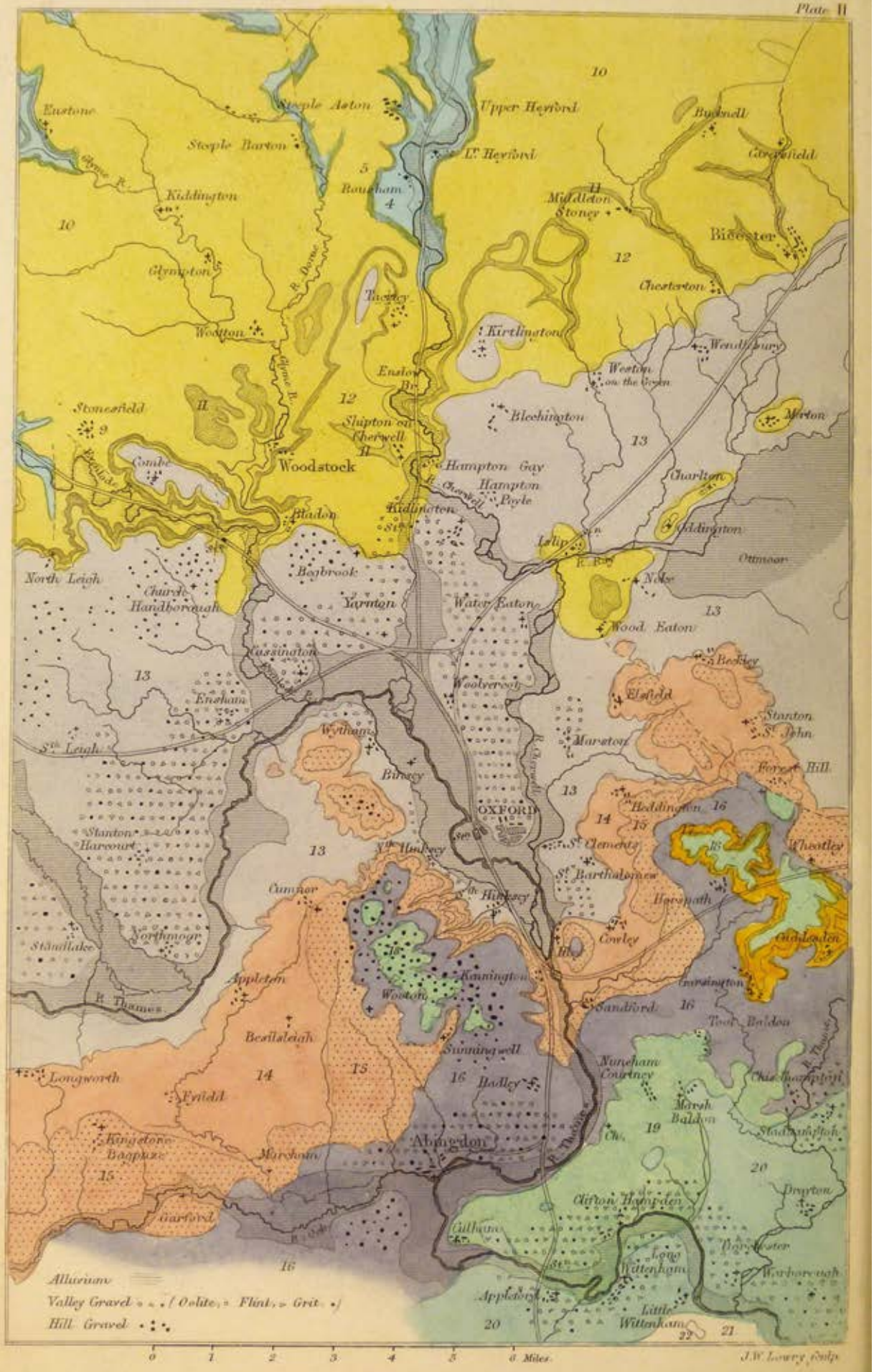


Fig. 9 'Vesuvius', 1869 fold-out colour lithograph frontispiece to book of same name. Scale not stated but is approximately 1:100,000. The area within the neat line 17 x 20.6 cm. Five colours are used separately without overlaps to show lava flows. The pale yellow for prehistoric lava over the north of the map nearly matches the age-toned paper. Likewise, the pale grey for ash has a low contrast. The colour registration is poor. Author's collection.

patterns to distinguish the different rocks. At this stage, in the mid-1830s, engraving was perceived by his publisher as the superior method of map presentation, lithography was reserved for illustrations. Phillips's next opportunity came in the early 1850s with his popular *Rivers, Mountains and Sea Coast of Yorkshire,* published by Murray, and his self-published *Geological Map of Yorkshire*. Colour lithography now was a possibility. There was a patented method by 1837 and Phillips was likely to have been aware through the Geological Society's copy of Victor Raulin's (1815–1895) 1843 *Carte Géognostique du Plateau Tertiaire Parisien*.

However, there were problems with colour mixing and oxidisation in the colour plate map in the book. These were partly mastered by its second edition. The *Geological Map of Yorkshire*, which used the same colours,



J.W. Lowry, Sculp.

has weathered much better, for reasons that are not clear. However, in his last decade, Phillips's publisher Clarendon reverted to hand-coloured engraving for the maps in his books, *Vesuvius* and *Geology of the Thames Valley*. This practice by British publishers of reverting to a traditional method was also true in the Geological Survey of Great Britain, which did not adopt colour lithography until 1900.[49]

There were exceptions, notably the firms of W. & A.K. Johnston and Bartholomew, both in Edinburgh, excelled at colour map lithography, the former in atlases from 1854 and the latter in topographic map series from the mid-1880s.[50] In Dublin, Forster printed Richard Griffith's (1784–1878) 'Geological Map of Ireland' in 1853.[51] These contemporary developments were unknown to Monkhouse and Phillips; but later, when time had proved the success of the colours, Phillips's publishers did not engage with the more efficient new technology of colour lithography. Successful adoption of colour lithography by commercial publishers and geological surveys in France and Germany from the 1840s and 1850s, were not matched in Great Britain until much later.

Phillips's later experience of colour printing for his geological maps wobbled between unimproved colour technology and reversion to traditional hand-coloured engravings. Perhaps the young Phillips would have persisted with colour lithography; the old professor left it to his traditional book publishers.

Acknowledgements

I am deeply indebted to Professor Michael Twyman and Dr Karen Cook for their deep knowledge of the history of lithography and specialist knowledge of the printing history of geological maps, respectively as my references attest, and for their personal advice, encouragement and assistance. My friend Duncan Hawley has loaned me maps and provided specialist cartobibliographical knowledge for which I am grateful. I would like to thank Caroline Lam and Wendy Cawthorne of the Geological Society and Emily Chen of Oxford University Museum of Natural History for their help in locating examples of Phillips's maps.

Fig. 10 An untitled geological map showing a section of the Thames Valley and its tributaries in the vicinity of Oxford in Phillips' *Geology of Oxford and the Valley of the Thames.* The scale is one inch to three miles / 1:190,080. The area within the neat line is 19.4 x 12.2 cm. The patterns are explained in the lower left corner, but the colours are numbered and key to them is unhelpfully on page 400. Author's collection.

Notes

1 The earliest accounts in English use the word chalk for the marker. This was a functional description and not a material description, which caused a great deal of confusion until the French usage of *crayon* was adopted.

2 Solnhofen is now well known for its remarkable preservation of fossil fish, reptiles and insects. In 1864 at Solnhofen, the recognition of fine feathered fossils led to the interpretation of the transitional form from reptile to bird, *Archaeopteryx*.

3 Another brother, Friedrich André, took the process to France in 1802 where the term *lithographie* was first adopted.

4 Thomas Fisher, 'Mr Philip H. Andre, the first Polyautographic Printer in England, AD 1801' in *The Gentleman's Magazine*, March, 1808, p. 193.

5 Fisher, 1808, p. 194.

6 Henry Bankes wrote that since Vollweiler had left 'the art has been wholly neglected in this country; for I cannot consider the use of it in the Quarter-Master-General's Office, at the Horse-Guards, for the printing of plans of battles and maps of the seat of war, any application of it favourable to its encouragement as a branch of fine arts; although I am ready to allow, that even this employment of the invention has been the means of preserving it to the country'. Henry Bankes, *Lithography; or, The Art of Making Drawings on Stone, for the Purpose of Being Multiplied by Printing*, facsimile in Michael Twyman (ed), *Henry Bankes's Treatise on Lithography; reprinted from the 1813 and 1816 editions with an introduction and notes by Michael Twyman*. London: Printing Historical Society, 1976, p. 4.

7 Bankes, 1813, pp. 6–7.

8 Richardson was the Rector of Farleigh Hungerford, Somerset. He met Smith, then an engineer for the Somerset Coal Canal Company, at the Royal Bath and West of England Society and quickly came to recognise his knowledge when Smith re-arranged his fossil collection into chronological order, explaining the strata where they would be found near Bath. Richardson encouraged Smith to record his knowledge; he and a mutual friend, the Rev. Joseph Townsend (1739–1816), recorded Smith's dictation of *The Order of the Strata* in 1799, thereby establishing Smith's priority to this great advance in earth science. Many years later, in 1831, Smith donated the original document to the Geological Society. John Phillips dedicated his 1844 biography of his uncle to Benjamin Richardson.

9 John Henry, 'The First Geological Map of a Country: William Smith's A Delineation of the Strata of England and Wales' in *Journal International Map Collectors' Society*, 2014, No. 139, pp. 17–30.

10 Joan M. Eyles, 'William Smith: the Sale of his Geological Collection to the British Museum' in *Annals of Science*, 1967, 23, 3:177–212.

11 J.M. Edmonds, 'The First Apprenticed Geologist' in *Wilts. Archaeological and Natural History Magazine*, 1982, Vol. 76, pp. 141–54.

12 Michael Twyman (ed.), *John Phillips's Lithographic Notebook; reproduced in facsimile from the original at Oxford University Museum of Natural History*. London: Printing Historical Society, 2016, p. 17. Some of the lithographic stones used by Barker remain, with their original images, at the Victoria Art Gallery in Bath. Twyman, 'Thomas Barker's Lithographic Stones', in *Journal Printing Historical Society*, 1977, No. 12, p. 3. The lithographic stone used, after microscopic examination, is conjectured to have been quarried at Corston near Bath or Highfield quarry near Wick, Gloucestershire. Twyman, 1977, pp. 13–14.

13 John Henry, 'William Smith's London Neighbourhood' in *Earth Sciences History*, 2016, Vol. 35, No. 1, pp. 14–15.

14 Twyman, 2016, p. 20.

15 *Annals of Philosophy; or, Magazine of Chemistry, Mineralogy, Mechanics, Natural History, Agriculture and the Arts*. Articles on lithography were often translated from continental publications. Twyman, 2016, p. 36, fn. 10–13.

16 Twyman, 2016, p. 36.

17 Twyman, 2016, p. 28.

18 Twyman, 2016, p. 40.

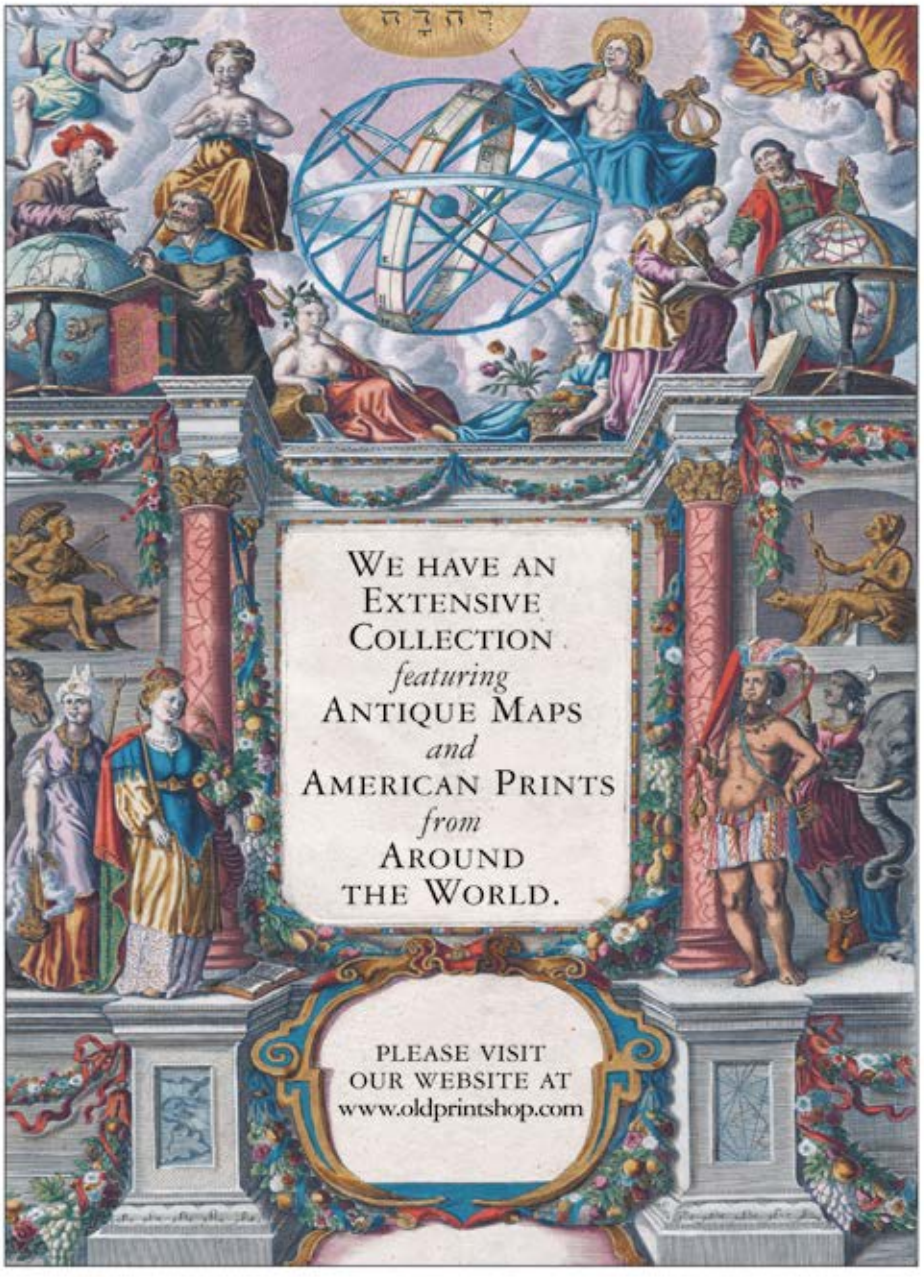
19 The proposed canal was not constructed. Jack Morrell, *John Phillips and the Business of Victorian Science*. Aldershot: Ashgate, 2005, p. 24.
20 Morrell, p. 25.
21 Twyman, 2016, p.14, n. 25.
22 Twyman, 2016, pp. 66–67.
23 Morrell, 2005, pp. 25–26.
24 Morrell, 2005, p. 27.
25 Between paying jobs, Smith and Phillips, explored and increased the geological detail for county maps of Northumberland, Durham, Cumberland and Westmoreland for Smith's *A New Geological County Atlas of England and Wales*. These were the last to be issued before the Cary brothers cancelled the publishing project commenced in 1819 with Smith by their father John Cary. John Henry, 'The First Geological Map of a Country: William Smith's A Delineation of the Strata of England and Wales' in *Journal International Map Collectors' Society*. No. 139, pp. 24–25.
26 Morrell, 2005, p. 48
27 Morrell, 2005, p. 53.
28 Morrell, p. 82.
29 By the time of the second volume the last phrase of the main title had been altered slightly from '*Plates of the Fossil Plants and Animals*' to '*Figures of the Fossils*'.
30 John Murray II (1778–1843) was the second generation of the eponymous firm founded by his father, John Murray I (1737–1793). J. Murray II moved the firm from Edinburgh to London. The firm was sold by John Murray VII (1941–) in 2002. Its archives are held in the National Library of Scotland.
31 A 'Geological Map of Scotland' printed by William Home Lizars of Edinburgh for insertion in William Rhind's *The Scottish Tourist* in 1845 oxidised noticeably enough in its first years that Lizars reverted to hand-colouring for its insertion in *Oliver and Boyd's' Scottish Tourist* in 1852. See Karen S. Cook, 'From False Starts to Firm Beginnings: Early Colour Printing of Geological Maps' in *Imago Mundi*, 1995, Vol. 47, p. 166. Current inspection (19/3/2019) of the two editions in the British Library confirms that the original colours have survived in less than 5 percent of the map, the remaining have all oxidised to dark brown. A second edition of The Scottish Tourist, dated from the text as 1846/47 already reverted to hand-coloured engraving (personal communication with Francis Herbert, 6/5/2019).
32 John Phillips, *A Map of the Principal Features of the Geology of Yorkshire*. Published for the Author. Available from the author St Mary's Lodge York, Mr. W. Monkhouse, York, or Mr. Tennant, the Strand, London.
33 Little has been found about W. Bevan; the trail of lithographs that he drew date from 1843 to 1863, were mostly of Yorkshire buildings and landscapes, and all printed by Monkhouse.
34 Morrell, 2005, p. 166.
35 John Ward Knowles, n.d., 'Monkhouse, William, Lithographer and Photographer'. Photocopy of manuscript copy for entry in Knowles, *York Artists*. York City Library ref, Y040. (Courtesy of Michael Twyman), p. 2.
36 The History of Geology Group is an affiliated group of the Geological Society of London, the oldest geological society in the world, founded in 1807.
37 Gordon L. Herries, 'Norman Edward Butcher 1929–2017' in *The Geoscientist On-line*. https://www.geolsoc.org.uk/About/History/Obituaries-2001-onwards/Obituaries-2017/Norman--Edward--Butcher-1928-2017 (Accessed 21/3/2019).
38 Norman E. Butcher, *The History and Development of Geological Cartography: Catalogue of the Exhibition of Geological Maps in the University Library, Whiteknights, Reading*. Reading: University of Reading, 1967, p. 160.
39 Copies at the British Library, Oxford University Museum of Natural History, and Geological Society of London.
40 This combination is from Engelmann's patent of 1837, which is the precursor of today's CYMK (cyan, yellow, magenta and key – usually black) and is the standard for colour printing. (Personal communication with M. Twyman 28/1/2019).
41 These colours for sedimentary rocks were to a large extent established by William Smith's usage. (Abraham Gottlieb Werner earlier established the conventions for igneous rocks). Although there were many more shades by 1885 when geological colours and symbols were established internationally for the proposed Geological Map of Europe, the colours were essentially Smithian for sediments. (Octavio Puche-Riart). The Third International Geological Congress, Berlin (1885) in *Episodes*, 2017, Vol. 40, No. 3, p. 257.
42 The New Red Sandstone is now better known by its constituent formations, the most extensive of which is the Mercia Mudstone in England, and which is still followed the by Geological Survey convention, as shades of mid-brown.
43 Morrell, 2005, p. 437.
44 Phillips had previously observed the extinct volcanoes of the Auvergne during a field trip in 1855 with Lee and his sister Anne.
45 Morrell, 2005, pp. 281–82.
46 John Phillips, *Vesuvius*. Oxford: Clarendon Press, 1869.
47 Morrell, 2005, p. 283.
48 Morrell, 2005, p. 285.
49 In my own collection of Geological Survey one-inch scale maps, I have hand-coloured sheets as late as 1943.
50 In Edinburgh, the brothers William (1802–1888) and Alexander Keith (1804–1871) Johnston were both apprenticed as engravers to William Home Lizars (1788–1859) and set up independently as W. & A.K. Johnston in 1826. They developed early connections with German geographer cartographer Heinrich Berghaus (1797–1884) whose *Physikalischer Atlas*, 1848, was emulated in their own *The Physical Atlas* of the same year. The editions of 1848 and 1850 employed hand-colouring to the engraved geological map. In the 1854 edition the engraved map outlines were printed in colour with small hand-coloured areas. In 1856 they published in colour lithography: Prof. James Nicol's *Geological Map of Scotland* and, in 1857, Nicol and Murchison's 'Geological Map of Europe'. Their more detailed maps do not appear to have suffered the problems of colour deterioration and variation experienced by Monkhouse and his successors.
51 Herries Davies, 1983, p. 59.

John Henry *worked as a geologist for consulting engineer, ARUP, producing preliminary engineering soils maps from aerial photographs and satellite imagery for large civil engineering projects in the UK and around the world. Since retiring, he continues to consult especially where historic aerial photography is key to construction issues. As Nineteenth Century Geological Maps (www.geolmaps.com), he buys and sells antique and historic geological maps, sections, illustrations and books. Currently he is secretary of the History of Geology Group (HOGG) of the Geological Society of London.*

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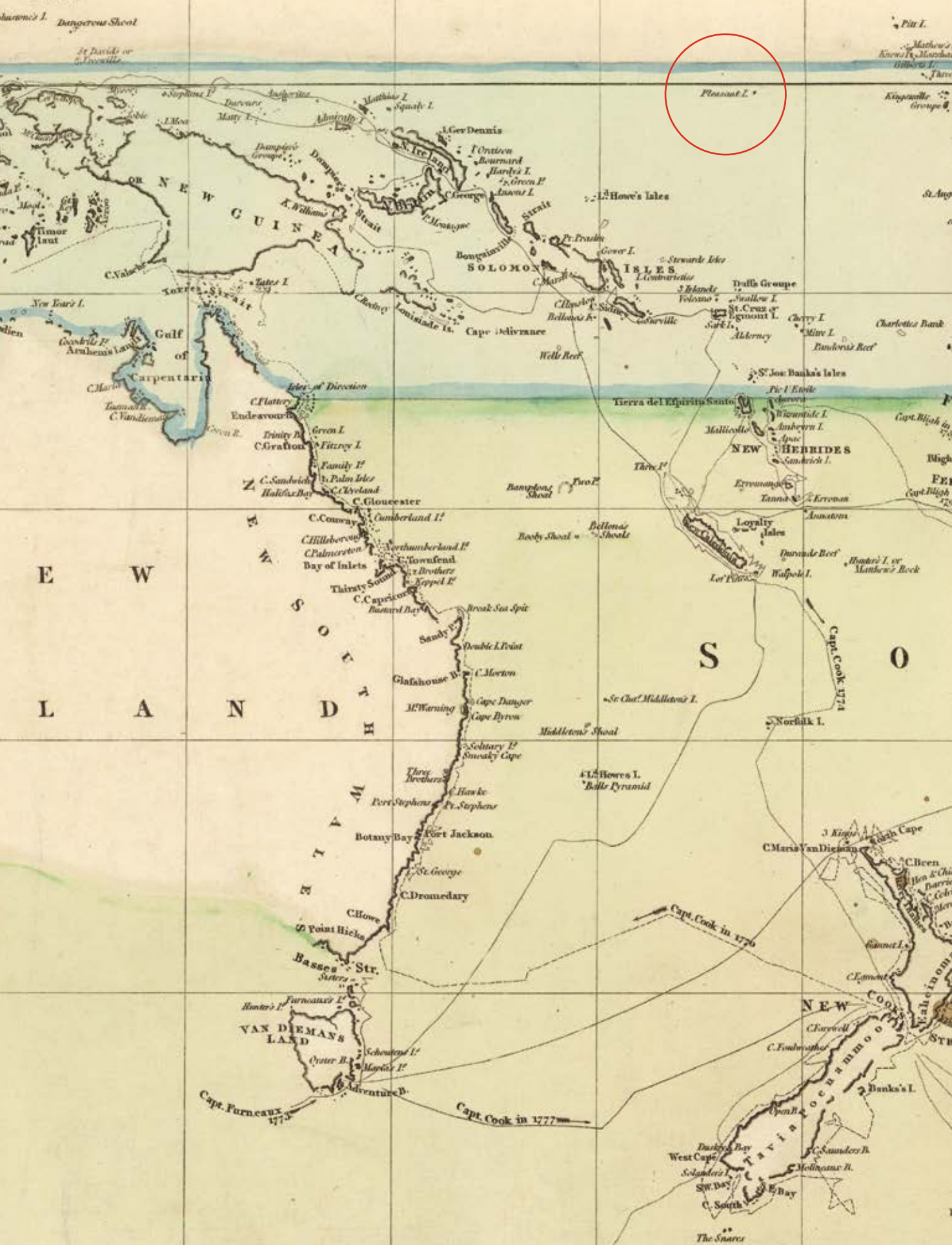
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MAPPING NAURU

A microcosm of imperialism

Alice Tonkinson and Robert Clancy

Nauru, the world's smallest republic, appears consistently in the international press for its role as the host nation of the controversial Nauru Regional Processing Centre, an offshore Australian immigration detention facility. Yet, really what do we know of this island? It is a 21.1 square kilometre coral atoll immediately south of the equator in Micronesia (0.5228°S, 166.9315°E). Its population of 11,000, mainly native Nauruans, once lived in a fertile band of several hundred metres width, encircling a massive phosphate rock interspersed amongst limestone. Today 80 percent of the island is a denuded strip mine site, with the phosphate deposits practically exhausted following decades of extraction. Nauru's current diplomatic and economic ties to Australia have been formed from a longstanding relationship, which saw Australia act as the island's administrator following World War I until Nauru became self-governing in 1966.

Recently a rare collection of colonial and post-colonial Australian reports came on the market. One of these, with its map of Nauru, was the *Report on Administration of Nauru during the year 1922* prepared by the Administrator for Submission to the League of Nations and printed and published for the Government of the Commonwealth of Australia by the Government Printer in Victoria. This article is based on that report with its attached map. It tells of an extraordinary story of the impact of Western intervention on this mid-Pacific island. This article reflects on Nauru's history since the first recorded point of European contact in 1798, with reference to its cartographic record from its inclusion in nineteenth-century European maps of the Pacific to the twentieth-century report maps produced prior to Nauru becoming an independent republic in 1968.

Fig. 1 Detail of 'Reduced Chart of the Pacific Ocean' from the one published in Nine Sheets by A: Arrowsmith'. 1798. This is one of the earliest charts on which the discoveries of Captain Cook are noted. Naruru is marked as Pleasant Island, circled in red. Library of Congress.

Ethnography, Oceania and colonisation: Nauru to 1914

Prior to the eighteenth century the remote and tiny island of Nauru was occupied by a Polynesian–Micronesian population for 3,000 years and over one hundred generations. The population was divided into twelve clans, however no clan claimed particular areas of the island, instead, land was owned by family units.[1] The island's dynamic social and natural order was perfectly adapted to the environment, and without record of social upheaval or destructive disease. All this would change with the European exploration of the Pacific Ocean.

James Cook's three voyages across the Pacific in the latter part of the eighteenth century, established British dominance of the seas and opened Oceania to colonisation. The first recorded European contact with Nauru was in 1798, when the British whaler *Hunter*, captained by John Fearn, approached the island and named it Pleasant Island (Fig. 1). The name would continue to be used on maps into the twentieth century. The progress made in mapping the region by the early nineteenth century can be seen in the map 'Australasia and Polynesia' by brothers William and Daniel Lizars for Ewing's *New General Atlas*. Nauru is included under the name 'Pleasant I.' (Fig. 2). The French, not far behind the British, were underpinned by an extraordinary series of expeditions into the Pacific combining the science of the Enlightenment with a nose for their own imperial designs. First amongst these were the three voyages of explorer and naval officer J. Dumont D'Urville (1790–1842). D'Urville explored the south and western Pacific, Australia, New Zealand and Antarctica and, in 1832, his observations led to a recognition of three cultural divisions within Oceania. To Polynesia he added Micronesia, and Melanesia (Fig. 3). These grouping were quickly incorporated into contemporary printed maps. Nauru is depicted within the Micronesian division. Though today considered to be simplistic and failing to fully reflect the complex cultural and environmental influences that shape the ethnological

history of Oceania, to nineteenth-century Europe these divisions were fundamental to understanding populations in the Pacific and were highly influential to German geographers who were to have significant impact in promoting public interest in the region. Foremost amongst them was the cartographer August Petermann (1822–1878).

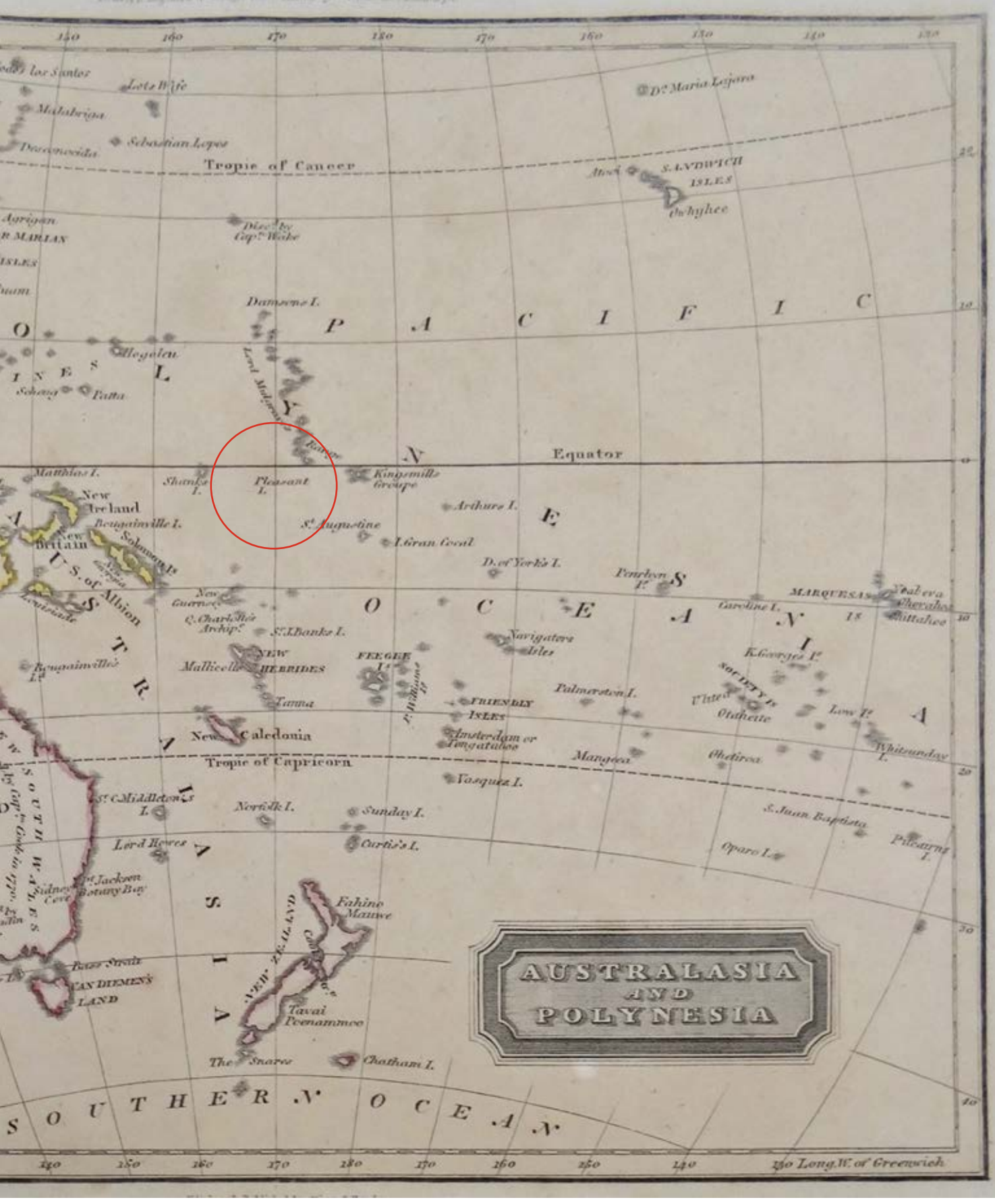
Following his training with geographer Heinrich Berghaus (1797–1884) in the late 1830s, Petermann spent a decade in Edinburgh and London, where he was exposed to the geographical exploration and colonial development by the British at the height of empire. In 1854 he returned to Germany, joining the Perthes brothers in Gotha, forming a private 'institute' which not only produced publications that shared recent geographic discoveries and scientific information with a receptive public, but also promoted expeditions. Petermann produced his monthly journal *Geographische Mitteilungen* from 1855. It was integrated with existing Justus Perthes's publications such as *Stieler's Hand-Atlas* and Berghaus's *Physikalischer Schul-Atlas* (Physical School Atlas). The journal and accompanying maps incorporated ideas and data from fields such as ethnology, statistics, hydrology, seismology, oceanography and volcanology.[2] The map 'Polynesien und der Grosse Ocean,' which was published in the *Mitteilungen* in 1872, provides an example of how ethnological interest of the period was incorporated into the cartography (Fig. 4).

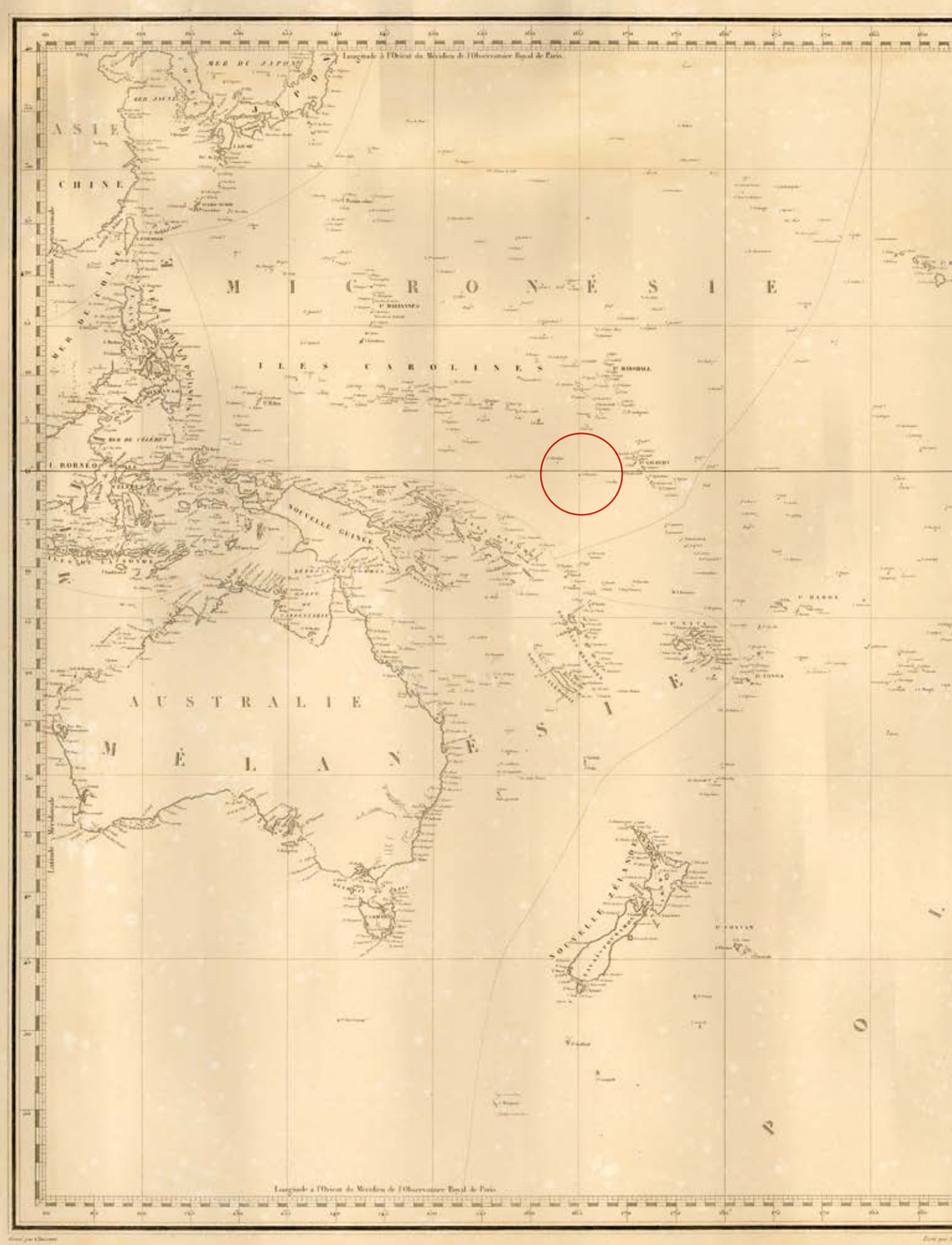
Despite European interest, Nauru remained relatively isolated from Western contact until the 1830s, when escaped convicts from the penal colony on Norfolk Island some 3,000 km to its south arrived. The beachcombers played a role in expanding Nauru's trading capabilities, often acting as intermediaries with visiting ships and helping to develop a profitable trade in copra (dried coconut from which oil is obtained). However, their presence had a devastating impact on the local population: they taught the Nauruans how to ferment coconuts to make alcohol and encouraged the

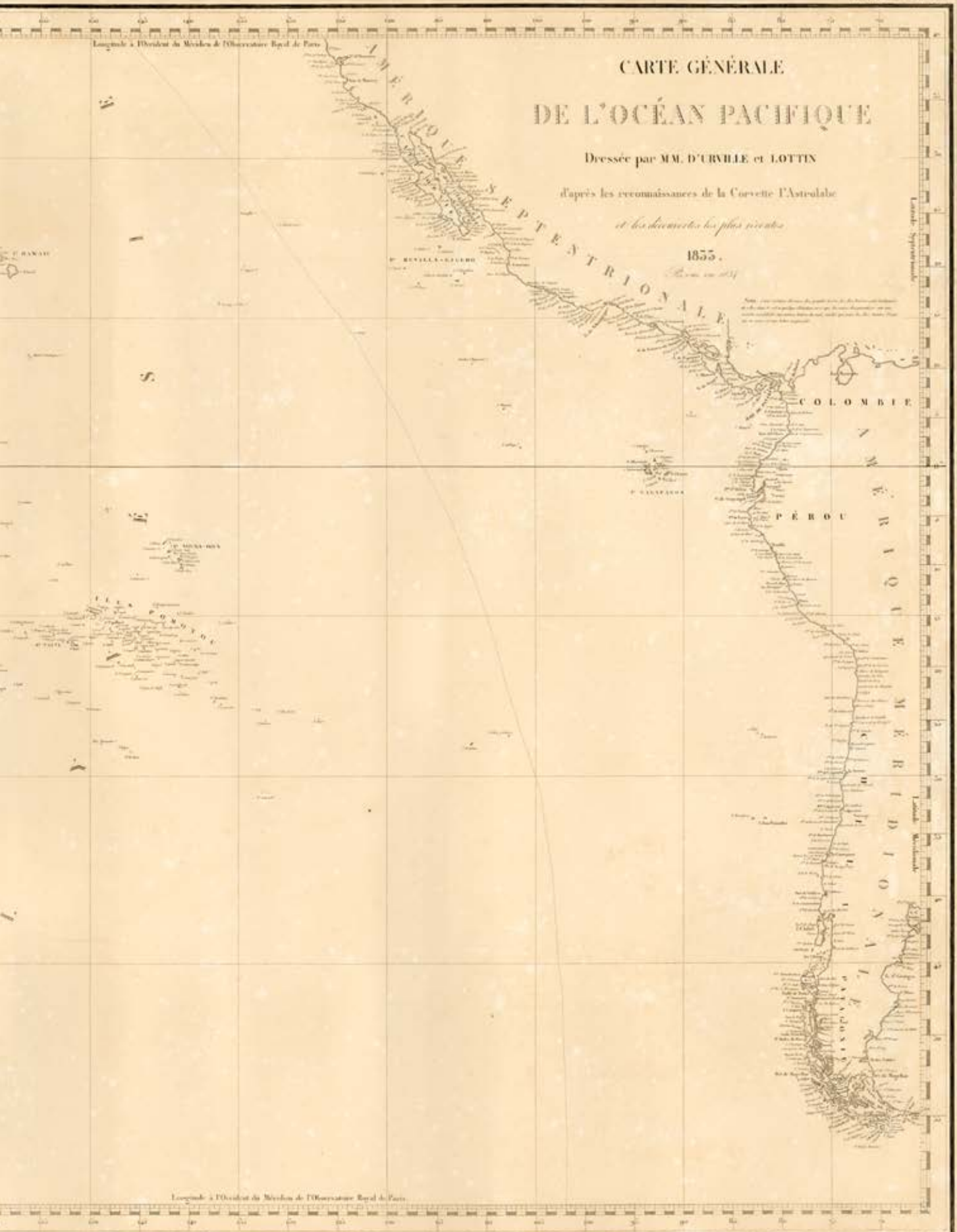


Fig. 2 'Australasia and Polynesia', drawn and engraved by W. & D. Lizars, c.1819, Oliver & Boyd, Edinburgh. 28.9 x 21.9 cm. Private collection.

Overleaf
Fig. 3 Dumont D'Urville, 'Carte Generale De L'Ocean Pacific Dressee par M.M. D'Urville et Lottin d'apres les reconnaissances de la Corvette l'Astrolabe et les cecouvertes les plus recentes' 1833. Revue en 1834. The Pacific cultures of Mélanesie and Micronésie were identified by D'Urville and are clearly marked on the map. Nauru is marked as I. Pleasant. Courtesy of Barry Lawrence Ruderman Antiques Inc., www. raremaps.com


AUSTRALASIA AND POLYNESIA
Tropic of Cancer
Tropic of Capricorn
Equator
PACIFIC OCEAN
SOUTHERN OCEAN
AUSTRALIA
NEW ZEALAND
NEW CALEDONIA
NEW HEBRIDES
FRIENDLY ISLES
SOCIETY Is
MARQUESAS
S. LVDWICH ISLES
Owhyhee
Pleasant I.
Kingsmills Groupe
Arthurs I.
St. Augustine
Gran Coral
D. of York's I.
Penrhyn I.
Caroline I.
Navigators Isles
Palmerston I.
Otaheite
Mangaia
Vasquez I.
Sunday I.
Norfolk I.
Curtis's I.
Lord Howes
Fahino Mauwe
Tavai Poenammoo
Chatham I.
The Snares
VAN DIEMEN'S LAND
Port Jackson
Botany Bay
Sydney Cove
Torres Straits
Whitsunday I.
Pitcairn I.
Oparo I.
Amsterdam or Tongatabee
Tanna
Mallicolla
Leq. Maria Lejaro
Sebastian Lopez
Dangerous I.
Matthias I.
New Ireland
Bougainville I.
New Britain
Solomons Is
New Guinea
Shanks I.
Hogoleu
Patta
Schaug
Lord Mulgrave's Range
Arrow
Direct by Capt. Wake
Agrigan
Mariana Isles
Guam
Marian Isles
Lagoon
Lat. 0
Long. W. of Greenwich

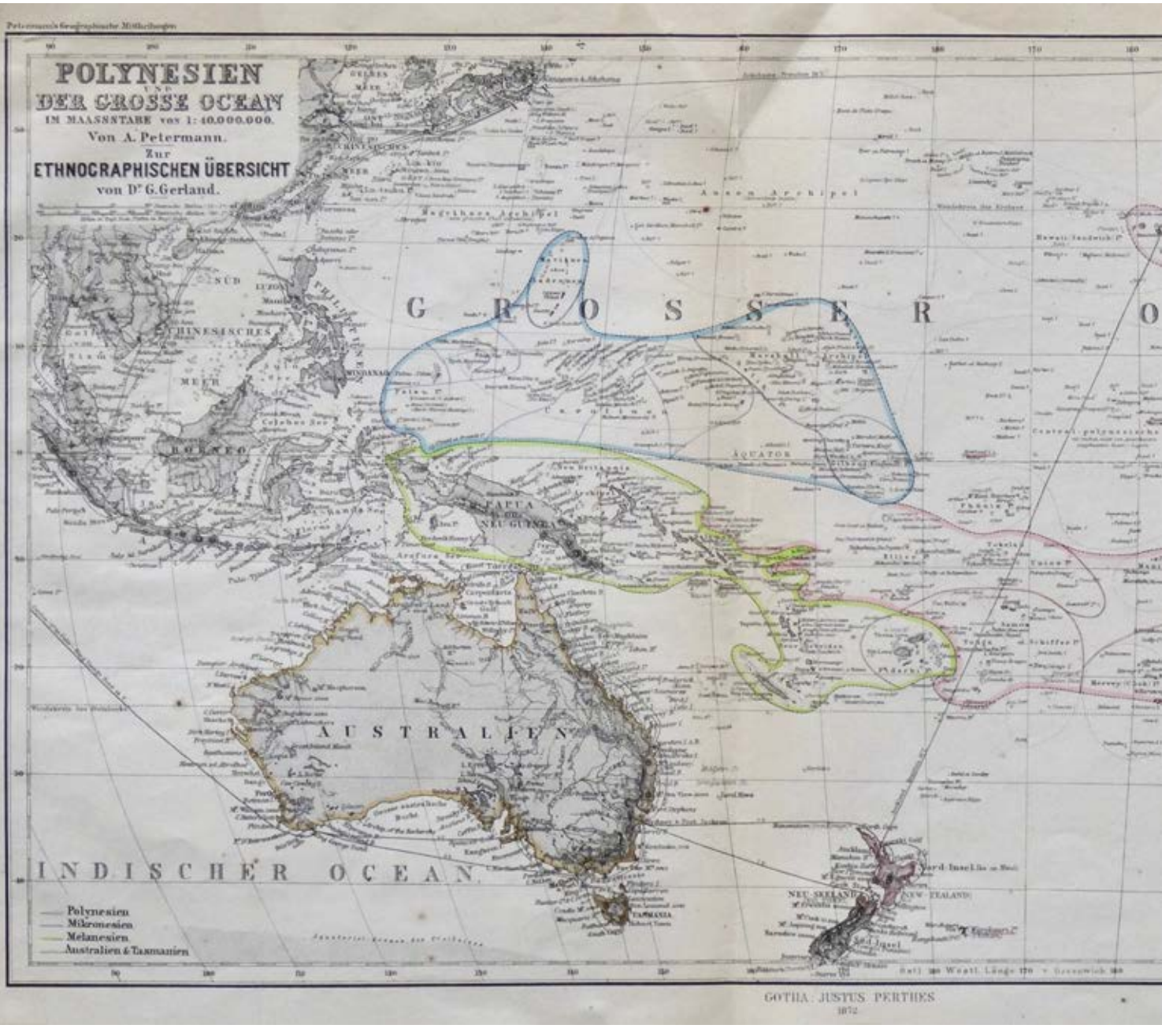

Longitude à l'Ouest du Méridien de l'Observatoire Royal de Paris.
ASIE
CHINE
MER DE JAPON
MER JAUNE
MER DE CHINE
MICRONÉSIE
ILES CAROLINES
I. BORNÉO
MER DE CELEBES
NOUVELLE GUINÉE
AUSTRALIE
MÉLANÉSIE
NOUVELLE ZELANDE
POLYNÉSIE
Longitude à l'Ouest du Méridien de l'Observatoire Royal de Paris.


Longitude à l'Occident du Méridien de l'Observatoire Royal de Paris
CARTE GÉNÉRALE
DE L'OCÉAN PACIFIQUE
Dressée par MM. D'URVILLE et LOTTIN
d'après les reconnaissances de la Corvette l'Astrolabe
et les découvertes les plus récentes
1855.
AMÉRIQUE SEPTENTRIONALE
COLOMBIE
PÉROU
AMÉRIQUE MÉRIDIONALE
Longitude à l'Occident du Méridien de l'Observatoire Royal de Paris

use of guns as trade for coconuts. This volatile mix of alcohol and firearms precipitated a war between the clans from the late 1870s that resulted in a decline in the native population from 1,100 to 700 over a decade.

Fig. 4 'Polynesien und Der Grosse Ocean' by Augustus Petermann, 1872. Justus Perthes, Gotha. 46 x 27cm. The different Pacific cultures as set out by D'Urville have been incorporated into Petermann's map of the Pacific. Private collection.

In just eighty years, a Nauruan society described by Carl McDaniel and John Gowdy in *Paradise For Sale* as 'rich with festivals, dancing, sports, games, storytelling and just being sociable mainly because it was easy,' with 'fish simple to catch or raise (in the lagoon), with coconut and pandanus trees essentially growing themselves, and the climate the same all year' had changed dramatically.[3]



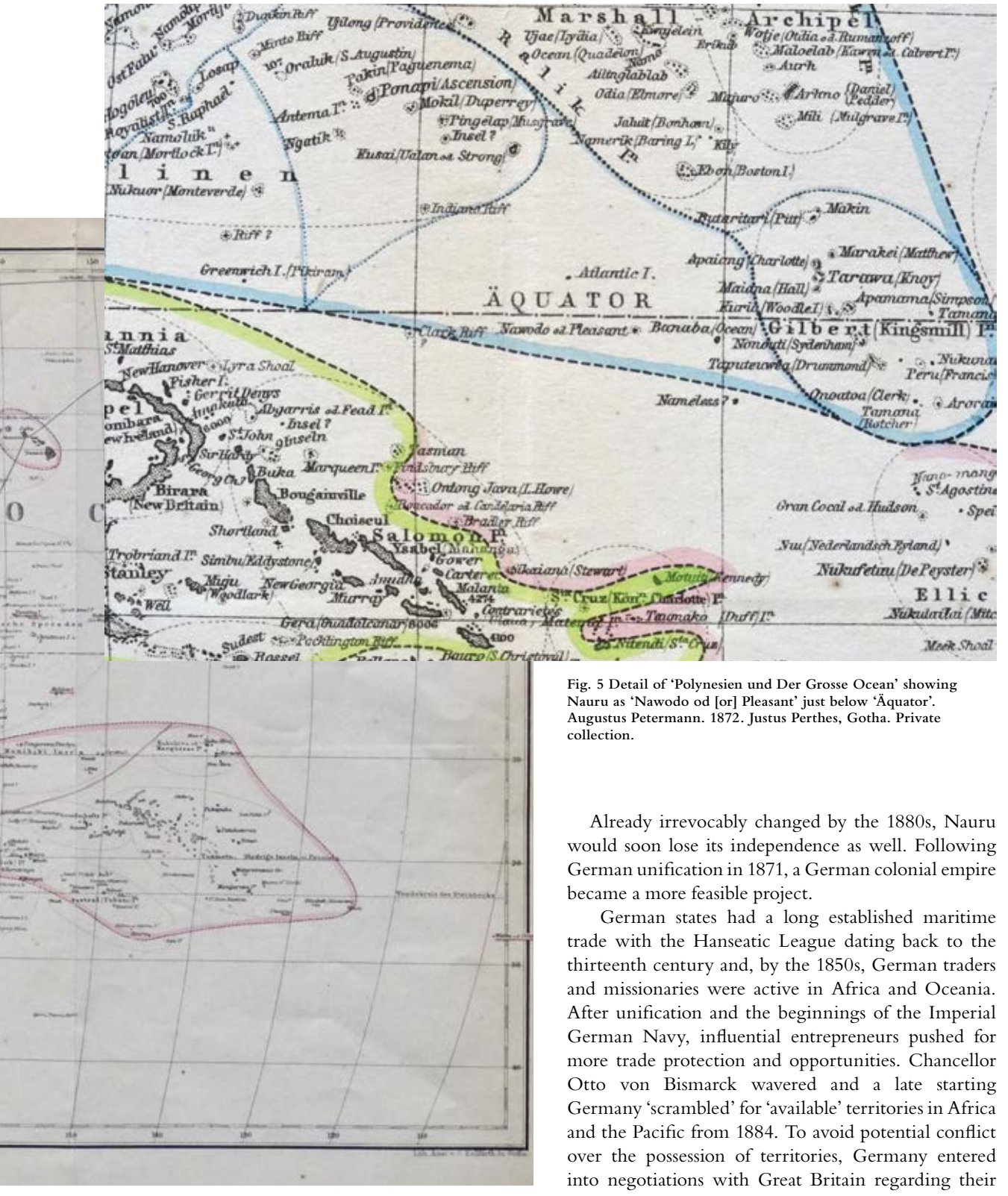


Fig. 5 Detail of 'Polynesien und Der Grosse Ocean' showing Nauru as 'Nawodo od [or] Pleasant' just below 'Äquator'. Augustus Petermann. 1872. Justus Perthes, Gotha. Private collection.

Already irrevocably changed by the 1880s, Nauru would soon lose its independence as well. Following German unification in 1871, a German colonial empire became a more feasible project.

German states had a long established maritime trade with the Hanseatic League dating back to the thirteenth century and, by the 1850s, German traders and missionaries were active in Africa and Oceania. After unification and the beginnings of the Imperial German Navy, influential entrepreneurs pushed for more trade protection and opportunities. Chancellor Otto von Bismarck wavered and a late starting Germany 'scrambled' for 'available' territories in Africa and the Pacific from 1884. To avoid potential conflict over the possession of territories, Germany entered into negotiations with Great Britain regarding their

respective spheres of influence in the Pacific, which was formalised in the Anglo-German Agreement of 1886. Under the Agreement, Nauru fell within the German sphere of interest; however, Germany did not immediately take possession of the island. German firms were already trading on the island and were aware of its potential to produce copra. However, the ongoing civil war threatened this development.[4] The Western traders on the island made representations to the German Consul in the nearby Marshall Islands for Germany to enact control of the island. The Marshall Islands had been claimed by Germany in 1885 and was a key producer of copra. In return for financing the administration of the protectorate advantageous trading rights were given to Jaluit Gesellschaft, a German trading consortium. On 1 October 1888, the German gunboat SMS *Eber* arrived at Nauru, hoisted a flag and proclaimed it a German Territory and called the island Nawodo or Onawero (Fig. 5). Nauru was grouped with the Protectorate of the Marshall Islands for administrative purposes. Under German rule, all guns were handed in and alcohol was banned, effectively putting an end to the civil unrest, which had decimated the population.

In 1899 geologist Albert Fuller Ellis (1869–1951) was transferred to the Sydney office of the Pacific Islands Company where he took particular notice of a rock brought back from Nauru, which was being used as a doorstop. His tests on the rock indicated it was phosphate and on visiting Nauru in 1900 he discovered the huge phosphate rock (guano) deposits. Guano is the accumulated excrement of seabirds and bats and is an effective fertiliser due to its exceptionally high content of nitrogen, phosphate and potassium. The nineteenth-century guano trade played a pivotal role in the development of farming in Australia. In 1906 the Jaluit Gesellschaft transferred the mining rights to the Pacific Phosphate Company (which was registered in Britain) in exchange for a cash payment and royalties. The German company was already mining guano on the neighbouring island of Banaba. Small royalties and compensations would also be paid to Nauruan landowners affected by the mining.

Following the outbreak of World War I in 1914 the island was captured by Australia. These mining interests were purchased from the Pacific Phosphate Company in 1919 by the governments of Australia, Britain and New Zealand and transferred to the British Phosphate Commission, a board of representatives from the three countries which managed phosphate extraction.

The cartographic record of the post-WWI administration of Nauru

After World War I, a League of Nations mandate transferred control of Nauru to Australia, New Zealand and Britain. To formalise the administrative arrangements under this mandate, the Nauru Island Agreement was constructed in 1919, vesting control of the island to an Administrator. The Australian Government served as the first administrator and would, in practice, continue to act as the island's administrator until Nauru become self-governing in 1966 (and then an independent republic on 21 January 1968). The exclusion to this was the years 1942–5, during which time Nauru was occupied by Japan.

As administrator, Australia prepared an annual report for the League of Nations. Of the forty-one reports produced, twenty-five include a map as an appendix. The majority of these maps show traditional land divisions, roads and coconut-growing areas, include population distribution data and sporadically include inset locality maps showing Nauru's regional position, particularly in relation to Australia. However, four reports featured fold-out colour maps of the island.

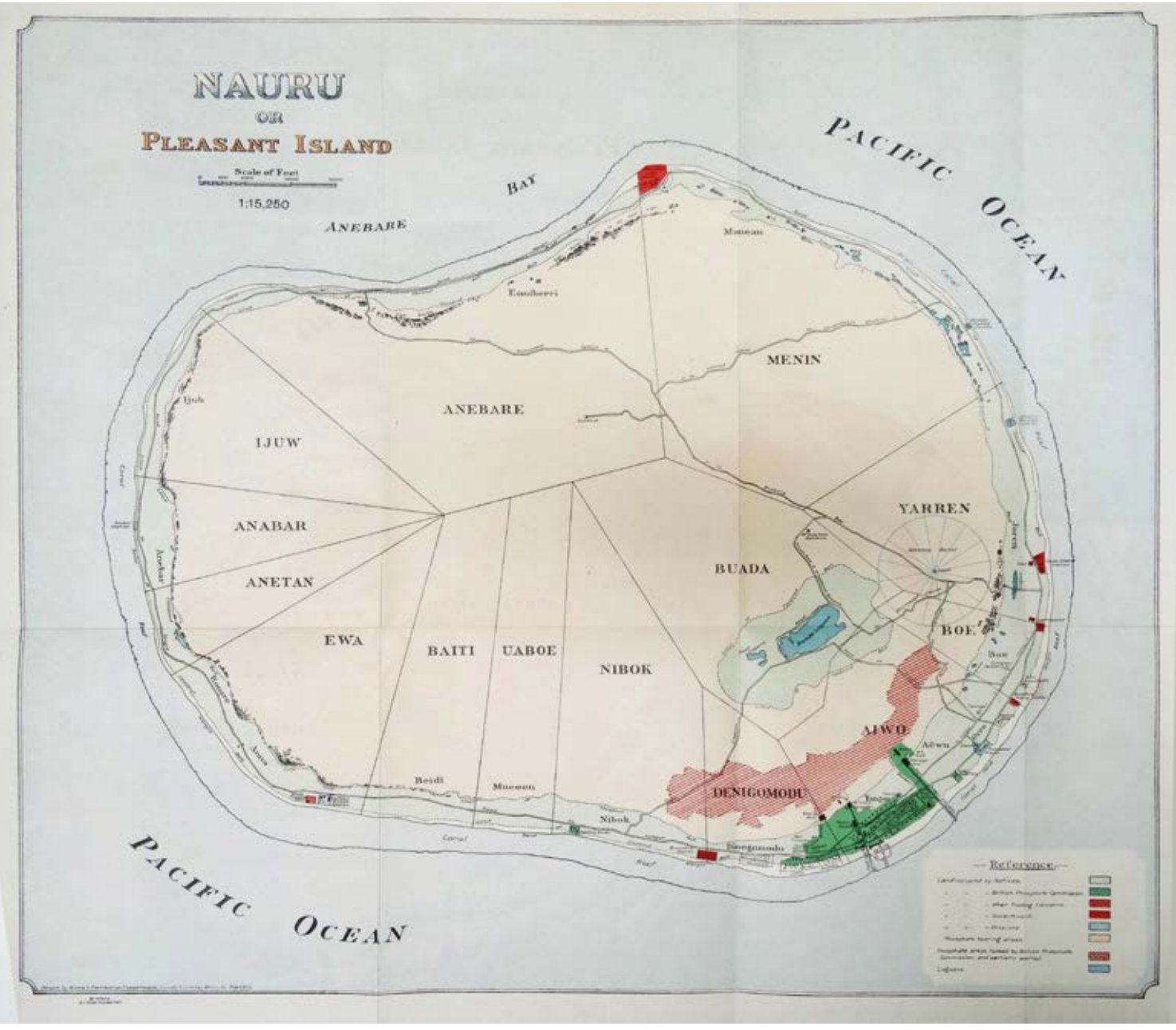
The first of these maps, 'Nauru or Pleasant Island,' was included in the report for the year 1922 and tells a clear story of Nauru to that point in its history (Fig. 6). Like the simpler boundary maps featured throughout the reports, Nauru is shown divided into traditional land districts. However, it also conveys resource information: the island is depicted with a central phosphate area surrounded by a thin rim of 'Land occupied by the Natives', all within a coral reef that limits access from the sea. The main development in the south-eastern corner is the processing unit of the British Phosphate Commission with a loading wharf, close to current workings. The Buada lagoon, surrounded by coconuts, was the site where locals adapted ocean-caught fish to fresh water to ensure a constant food supply prior to nineteenth-century trade. The major development – on the north coast – is a leprosarium. The population in 1922 was 2,156, of which an excess of 10 percent were thought to have leprosy. This followed a 20 percent mortality of the Nauruan population from the 1919–20 influenza pandemic. The death rate for 1922 was 1.5 percent of the population, with an infant mortality of 10 percent, considered 'the lowest death rates on record for Nauru'.[5]

The permanent wireless station, situated on the map in the 'Yarren' district, was a residue of German colonial government and a major reason why Australian

troops moved to take control of Nauru with the onset of World War I (as they did in German New Guinea).

The maps included in the reports of 1924 and 1926 show the creeping expansion of areas partially worked by the British Phosphate Commission. However, the fold-out colour map, 'Map of Nauru or Pleasant Island, 1939', is notable for new inclusions in the accompanying reference legend. Listed is 'Worked out [land] and handed back to owners'. As explained in the report for the period of 1947–48, 'apart from the phosphate deposits on the island, there are no other natural resources. Where the phosphate has been worked out

Fig. 6 'Nauru or Pleasant Island'. Drawn by Home & Territories Department, Lands & Survey Branch. 1923. Government Printer, Victoria. 48 x 54 cm. Private collection.



the land has been converted into wasteland studded with coral pinnacles, and gradually being converted into secondary growth'.[6] Here the cartographic record bears witness to the gradual resource depletion and environmental degradation of the island, which was the result of the conflict between Australia's economic interests and its duties as its administrator.[7]

Impact of Western influence on Nauru

Nauru presents an unusual case study. Particular characteristics of this small island and its native population have created development outcomes that would not necessarily have been seen in larger populations that had been subjected to colonisation by European powers. Nauru's population is below what is considered a 'critical mass'; its resources are limited to a single non-renewable product (phosphate rock), which was actively sought after by foreign nationals; the health and social conditions of the Nauruans have been negatively impacted by two hundred years of Western influence.

Prior to the arrival of the Europeans, the population had developed a 'thrifty gene' whereby the body's genetic make-up had adapted to a 'hunt-and-gather' environment, storing fat when food is abundant to ensure a source of nutrition in times of food shortage. As their lifestyle has been replaced by a more sedentary one, and imported food has become more readily available, the Nauruans of today have become the most obese population on earth with an over 40 percent incidence of type 2 diabetes. This extraordinary decline in population health is shared with many post-colonial Pacific populations. Interestingly, in Nauru, it has evolved in just the last one hundred years as the appended report of the Government Medical Officer (in the 'Administrator's Report') concludes that in 1922 'except for the leprosy outbreak [health on the Island] has been unusually good'.[8]

Perhaps the greatest impact on the well-being of the island's population has been their massive deposit of phosphate rock. Nauru suffered from the 'natural resource curse', whereby, paradoxically, a country with an abundance of a natural resource may experience poorer development outcomes. In the 1922 report, 182,000 tons of phosphate were exported, with 80 percent going to Australia. The total 'royalty' was £3,800, which (in the balance sheet of the 1922 report) was paid into general revenue used to support the administrator (though there was a 'Trust Account' containing £700 for the Nauruans). A mere trickle of funds relevant to the Nauruan population.

Following World War II a United Nations Trusteeship was established for Nauru until self-government was achieved in 1966 and a year later the Nauruan people purchased the assets of the British Phosphate Commissioners, to form the Nauru Phosphate Corporation. Their income was substantial, with a rollercoaster economy making Nauruans the second richest per capita people (after Saudi Arabia) in the world in the 1980s.

The Nauruan government established a future fund (Nauru Phosphate Royalties Trust) which was badly mismanaged, with asset value of $1.3 billion AUD in 1991, but today has a value of only $140 million AUD, with GDP per capita at around $5,000 US, 10 percent of earnings twenty years previously. With phosphate deposits exhausted, no alternate income, and unemployment of 25 percent, the majority of whom are employed by the government, the country can only survive with external financial assistance, mainly from Australia, its main beneficiary. With 80 percent of the island rendered unusable due to the years of strip mining, and with fishing and other resources significantly reduced due to contaminated run-off from the mining and with no replacement industries developed, support from the international community will be long-term.

The 1922 map of Nauru which shows a massive, but not renewable, natural resource surrounded by a narrow rim of fertile and habitable land managed by an outside 'administrator' (with an economic interest in the resource) unwittingly predicted a future that of course came about.

The true value of maps that accompany government reports has often been overlooked. Though these maps often appear on dealers' lists, their true value in telling an important story is usually restricted by the absence of the report. Though these reports appear in local auctions, they are uncommon but undervalued! In an age where issues of 'what to collect' abound, these reports offer great opportunity to the nascent collector.

Notes

1 Nancy Viviani, *Nauru: Phosphate and Political Progress*, Canberra: Australian National University Press, 1970, p.7.

2 Early geophysical maps published by A. Petermann. *Studia Geophysica et Geodaetica*, Oct. 2012, Vol. 56, Issue 4, pp. 1109–122. Jan Kozák. Jiří Vaněk, p. 1110.

3 Carl McDaniel and John Gowdy, *Paradise for Sale: A parable of nature*, Oakland, California: University of California Press, 2000, p. 27.

4 The conflict between the twelve clans began during a marriage festival at which one of the guests fired a pistol and shot a young chief.

The introduction of guns on the island, with every family in every clan owning them conflict tragically escalated.
5 Commonwealth of Australia, Report on the Administration of Nauru during the year 1922, Victoria: Government Printer, 1923, pp. 22–27.
6 Commonwealth of Australia, *Report to the General Assembly of the United Nations on the Administration of the Territory of Nauru from 1st July 1947, to 30th June, 1948,* Canberra: Government Printer, 1949, p.29.
7 Viviani, p. 2.
8 Commonwealth of Australia, Report on the Administration of Nauru during the year 1922, Victoria: Government Printer, 1923, p. 17.

Alice Tonkinson is studying for a Master of Museum and Heritage Studies at the University of Sydney. She works at the State Library of NSW and is also a map curator of a private collection.

Robert Clancy is a retired professor, pathologist and immunologist as well as a collector and curator of maps of Australia and Antarctica, about which he has authored four books and numerous articles. In 2005 he was appointed a Member of the Order of Australia for services to cartography and to the field of immunology. He is also a lecturer and promoter of early maps and the history of cartography.




Septentrionalium Terrarum Descriptio
G. Mercator / J. Cloppenburgh, Amsterdam, c 1630


Magnae Britanniae Et Hiberniae Tabula G. Blaeu, Amsterdam, 1630

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MAPPING MATTERS

News from the world of maps

Malta Map Society Member President of the Republic of Malta

On 4 April this year Dr George Vella, an avid map collector and long-time member of the Malta Map Society, was appointed President of the Republic of Malta. The Society is this year celebrating its 10th anniversary with a seminar *Imago Melitae* 2019 which will be held at the Presidential Palace on 16 November. The event will be sponsored by Dr Vella. Information: https://maltamapsociety.mt.



L-R Rod Lyon, MMS Press Officer; Claude Micallef Attard, MMS Treasurer; Dr Albert Ganado, MMS President; Dr George Vella, President of Malta; William Soler MMS Committee Member; Joseph Schiro, MMS Secretary; and Bernadine Scicluna, Curator of the Albert Ganado Map Collection.

1930s Map of the WH Smith's Empire

'A Map of England, Wales and Northern Europe showing all the branches of WH Smith existing on 31 March 1931' by leading British graphic designer MacDonald Gill (1884–1947) was recently sold by Chorley's Auctioneers in Cheltenham for £50,000.

Measuring 210 x 211 cm and drawn on a scale of one inch to the mile, this vast and colourful oil painting is a celebration of commercial high street success. It was commissioned in 1929 by the firm's chairman Charles H. St. John Hornby and director Arnold D. Power soon after it became a private company. Gill was generously paid £765 for the commission which reflects his reputation as a successful pictorial mapmaker.

Over two hundred outlets across England, Wales and Ireland (stretching between Penzance in Cornwall and England's northernmost town Berwick), France, Belgium and Holland are marked on the map with additional magnified insets of London, Manchester and Newcastle. Bookstalls are identified in red, shops in green and wholesalers in yellow. Gill depicts how the newsagent's business model developed along the country's railway network, first operating as newspaper stall at stations to capture commuter trade and then expanding into shops close by.

The map's pictorial detail is lively and amusing and reflects the entrepreneurial vigour of the commissioning company. It depicts every form of transport that would have been involved in the delivery of newspapers: trains dash across the countryside; steamers plough the coastline between ports along the British coast, to the Channel Islands and French coastal cites of Cherbourg, Havre, Dieppe and Boulogne; horses and carts, trucks and cyclists trundle between town and village; and a bi-plane flies over the English Channel to drop off its deliveries to Paris, Calais, Rouen, Brussels, the Hague, Flushing and Antwerp. The coastal waters jostle with boats of all kinds, evidence of the country's wealth and industry; they also teem with fish. Gill makes a playful nod to the nation's fishing industry: he identifies the fish that fed the British population: skate and dogfish off Plymouth, whitebait off Penzance, mackerel and sole in the Bristol Channel, plaice and sprats in the Irish Sea and haddock, cod and herring in the North Sea. From the northeast corner of the map the sun shines on the country's future and the wind face in the southwest corner blows a fair wind on the business of WH Smith.

MacDonald Gill, 'A Map of England, Wales and Northern Europe showing all the branches of WHSmith existing on 31 March 1931'. Reproduced by kind permission of Chorley's, Prinknash Abbey Park, Gloucestershire.


IRELAND
SCOTLAND
NORTH SEA
IRISH SEA
WALES
ENGLAND
ISLE OF MAN
NEWCASTLE & District
MANCHESTER & District
LONDON & District
HOLLAND
BELGIUM
FRANCE
CHANNEL ISLANDS
OWHS

The Mopelia Collection of Fine Atlases & Travel Books

The Mopelia collection, which goes on auction at Christie's, London on 5 June, contains nearly 200 lots of important atlases, sea-atlases, travel books and single sheet maps. The collection covers all geographic areas with fine examples from the sixteenth to the twentieth century. Represented are works by Porcacchi, Waghnaer, Wyfliet, Linschoten, Barentz, Blaeu, Van Keulen, Michelot, Faden, Vancouver, Laurie and Whittle, D'Urville, Vaillant, DeGaulle, Frezier, to name but a few.

Johannes van Keulen's *De Groote Nieuwe Vermeerder-de Zee-Atlas ofte Water-Werelt* is a highlight of the sale. Published in Amsterdam in 1688 and beautifully hand-coloured, this example includes 133 charts with two additional maps: a celestial chart after Ludovico Vlasbom and a world map by Carel Allard.

Amongst the nineteenth-century offerings is a complete set of thirteen volumes of Freycinet's *Voyage autour du Monde...éxécuté sur les corvettes de S. M. l'Uranie et la Phisicienne, pendant les années 1817, 1818, 1819 et 1820.* This official account of Freycinet's voyage of scientific exploration is filled with exquisite engravings of zoological and botanical observations.

Another standout lot is a first edition of Johannes Metellus's *Speculum orbis terrae* published in 1602. Five volumes in one, and posthumously published, the atlas contains maps of individual continents and islands which Metellus had published earlier. The sale catalogue states: 'Each of the parts is exceptionally rare [on] its own; to have the complete atlas is almost unheard of. We are aware of portions of the atlas, such as the Islands, Africa and an incomplete America on the market, but we have been unable to trace another complete atlas at auction or in the trade.' This copy includes the extremely rare North American map: 'Americae sive Novi Orbis proximarumque. regionum orae Descriptio' of which there are only three known examples. Christoph Wenzel Graf von Nostitz's name appears on the exlibris on the front pastedown. The auctioneer's value is between €120,000 and €170,000.



Johannes Metellus, 'Hispaniae Novae sivae Magnae recens et vera descriptio' from *Speculum orbis terrae*, Oberursel: Sutor, 1602. Christie's Images Ltd., 2019.

Maps and Society
Lectures in the history of cartography
Snapshot of the 28th series 2018–2019

8 November 2018, Prof. Bill Sherman (Dir. The Warburg Institute) & Prof. Edward Wilson-Lee (Sidney Sussex College, Univ. of Cambridge), ***Hernando Colón: Mapping the world of books***

Hernando Colón (1488–1539) was the illegitimate son of Christopher Columbus and Beatriz Enriquez de Arana. When he was thirteen he sailed with his father on the fourth voyage to the New World, 1502–1504. However, exceptional storms so damaged the *Santa Maria* that she had to be beached on St Ann's Bay, Jamaica, while help was sought from Hispaniola. In 1509 Colón made his last voyage to the Indies, before returning to enjoy the rest of his life on the substantial income from his father's estate.

At the turn of the sixteenth century the concept of a printed book was still a novelty and many regarded its future as limited. Colón, on the other hand was an enthusiast with a dream to create a universal library containing 'all books, in all languages and on all subjects, that can be found both within Christendom and without'. Over a period of time, he built up a substantial library of some 15,000 books and 3,000 prints. He made four major buying expeditions, 1513–16, 1520–22, 1530–31 and 1535–36. He bought in Rome, Bologna, Modena, Parma, Turin, Milan, Padua, Innsbruck, Vienna, Fribourg, Cologne, Maastricht, Antwerp, Paris, Poitiers, Burgos and Lyon. He travelled with clerks who listed his purchases, while he noted the condition of the copy, the price, the binding and where purchased. A team worked to distil the thousands of volumes into summaries, called the *Libro de Epitomes*. He also devised a classification system very similar to the current Dewey decimal numbering.

In 1539 Colón died and the collection was straightway taken into royal hands but as other collections grew and its unique nature declined, the books passed into the care of Seville Cathedral. Today there are perhaps just 4,000 books remaining in the Biblioteca Colombina in Seville.

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29 November 2018, Dr Vanessa Collingridge (Edinburgh), ***It's all Fake News! James Cook and the Death of the Great Southern Continent (1760–1777)***

There have always been rumours and gossip in circulation, the facts of which are often hard to prove. Dr Collingridge has researched how most people in the eighteenth century derived their knowledge of the world from printed sources and how knowledge was controlled. With the growth in the printing industry, an increasing number of cheaper newspapers and periodicals became available to the general public. These could be read aloud in places such as the coffee houses where men gathered to hear and discuss news. In particular, she researched the fake news surrounding the existence of a Great Southern Continent. From ancient times, it was thought there must be another great landmass in the southern hemisphere in order to balance the globe. Over the years, there had been numerous accounts by mariners of a benign and fertile country, rich with mineral resources and inhabited by strange people. Until these tales could be verified empirically, descriptions and conjectures circulated widely in newspapers and periodicals which had space to fill and copies to be sold. The *Gentleman's Magazine* from 1731 was a popular source of knowledge and, at 6d a month had a widespread readership and was very influential. It printed many articles on the subject. In January 1763 the magazine even carried a five-page article by French geographer Philippe Buache which included a fold-out chart purporting to show a land with rivers, mountains and other physical features. This could not be proved but was it was nevertheless published.

In 1772 Captain James Cook was commissioned by the British government to return to the Southern Ocean to establish whether such a continent really existed. When he returned home, in 1775, having circumnavigated the globe, he had authentic news and definitive maps. Thus, James Cook had, once and for all, disproved the fake news of the existence of a great continent in the Southern hemisphere.

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17 January 2019, Desiree Krikken (PhD student Dept. of Modern History, Univ. of Groningen) ***Bears with Measuring Chains. Early modern surveyors and the record of European physical space***

In the area of Friedlander during the late sixteenth century, there was a pressing need to survey existing dykes and estates. This was because of constant land reclamation and a shifting political frontier with Germany. As historical landscapes changed and more land became inhabitable landowners needed to know

their boundaries. There were a few printed manuals available, although many surveyors were barely literate and nor were they mathematicians. Most only reported their results in locally used measuring units and did not always make maps. There was no obligation to prove competence and no educational programmes for learning the trade. Surveying was by means of poles and chains; the work could be hazardous when local landowners and farmers objected and moved the poles. By-laws and rights existed, but were only transmitted orally from one generation to the next. Villagers feared that the traditions and the by-laws could be challenged.

Land surveys were needed to produce maps to demonstrate power. By 1600, there were twenty-seven land surveyors working. There is pictorial evidence from 1633 showing surveying by means of triangulation. Mathematical and engineering departments were established in Leiden and Franeker. The teaching was in Dutch and between 1641 and 1700 there were sixty-six students. Latin was not required but some knowledge of geometrical instruments was regarded as essential. A house still stands which carries a plaque showing a method of surveying by triangulation utilising a church spire. The date on the plaque is in the form of a chronogram which, when decoded, reveals the date as 1653. Eventually, land surveyors gradually became better qualified and certified practitioners.

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2 February 2019, Dr Elizabeth Haines (Dept. of History, Univ. of Bristol) ***Labour Recruitment, Taxation and Location: Mapping (and failing to map) mobile populations in early twentieth-century Southern Africa***

This talk explored twentieth-century population mapping in British colonies in Southern Africa, based on archival research in the UK, Zambia, South Africa and the United States.

The economy of this region was built substantially on the mining industry which, to function, relied on the massive circulation of indigenous Africans to work in mining centres. This migration was so extensive that in certain districts of Zambia (then Northern Rhodesia) as many as three-quarters of the men would be absent at any one time. Many of these would be beyond the bounds of the colony. Recent work by historians has suggested that attempts to regulate this movement was only very partially successful.

Histories of colonial cartography have focused strongly on the mapping of populations, and of ethnicities as a practical and ideological tool of domination. Many ethnic categories in those maps have since been rejected as colonial inventions. However, the demographic maps produced by British colonies in southern Africa must be read as 'invented' on other terms. By attempting to create the image of a fixed population, those maps disguise the government's ignorance about the location of the colonised peoples, and the instability of the colonies as autonomous political units.

An alternative cartography is that of the colonial labour agencies, private organisations that facilitated the transportation of workers to mining centres. These (rare) maps showing mines, recruitment offices and transportation routes are more revealing of the demographic history of the region than government documents.

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21 March 2019, Prof. Martin Bruckner (English Dept. and Centre for Material Culture Studies, Univ. of Delaware, US), ***The Rise of Monumental Maps in America: Aesthetics, technology and material culture***

In America by 1726, wall maps were in use in military academies. In 1755 Mitchell of Philadelphia published a map showing British and French dominions, and it is known that the famous John Henry map of Virginia (1770) hung in the Governor's mansion. The dimensions of these maps were limited by the size of the paper available. They were printed in sections and mounted on fabric. The result was very heavy and needed special fixtures to be attached to the wall. Maps were expensive as they were printed from engraved copperplates on special paper and hand coloured. However, from 1820, with the availability of machine made paper, rolls could be as long as 1,000 feet. Between 1830 and 1840, lithography, a cheaper method of printing replaced copperplate engraving and bolder optical effects could be obtained. By 1847, in newly industrialised America, the rotary press was able to produce copies faster and more cheaply, consequently wall maps were more readily available.

The New York Exhibition of 1853 displayed dozens of wall maps showing the recent history of America. Maps could now be produced large enough to be used as wallpaper, and were enthusiastically purchased by the general public for domestic use. As wall maps needed to be seen close to and viewed at eye level, looking at them could be a social event. In addition to

maps of the United States, thematic maps, propaganda and even gerrymandering maps were printed. County maps were popular and, for an extra fee, local businesses could have their advertisement inserted around the map edge to resemble a picture frame. The topography and the information on the map became less important as the decoration and cartouches were made even more pictorial. They became a way of telling stories, illustrating architecture and even displaying portraits. Maps played a significant role in the social life of mid-nineteenth-century America.

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2 May 2019, Jeremy Brown (PhD candidate, Royal Holloway, Univ. of London and the British Library) ***Democratising the Grand Tour: Self-reliant travel and the first Italian road atlases in the 1770s***

This talk drew on Brown's doctoral research on the Italian maps of the King's Topographical Collection at the British Library to explore the first printed road atlases of Italy in the context of the Grand Tour. After the initial publication of Carlo Barbieri's *Direzione pe' Viaggiatori* in 1771, consumer demand encouraged not only subsequent editions but also many derivative atlases, such as the two purchased for George III's personal map library: Andrew Dury's *The Roads of Italy* (1774) and the anonymous *A Brief Account of the Roads of Italy* (1775). These atlases were designed to help travellers find their way around Italy by representing post roads in unprecedented detail, and their portable size and fold-out strip-map format made carrying and using them on the road an easier task. The demand for these road atlases and the values they represented – an economical and self-reliant form of touring – speak to the evolving nature of the Grand Tour in the late eighteenth century. Together with more condensed and practical guidebooks, the road atlases of the 1770s, and later, promised to make leisure travel in Europe an experience open to wider sections of society. Finally, it was speculated that the atlases had their origins in a Florentine cartographic workshop ran by the Giachi family, who were producing manuscript versions around the same time.

Report by Pamela Purdy

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CARTOGRAPHY CALENDAR

Exhibitions

Until 16 July 2019, The Hague
Koninklijke Bibliotheek
De geschiedenis van Nederland in oude kaarten (The history of the Netherlands in old maps) Each map in the exhibition shows an aspect of the Dutch past, between 1482 and 1953. Information:https://www.kb.nl/nieuws/2019/de-geschiedenis-van-nederland-[...]

Until 21 July 2019, Paris
Bibliothèque Nationale De France
Le Monde en Sphère (The World in Spheres) retraces 2,500 years of a history of science. Nearly 200 works from the collections of the BnF and loans from prestigious libraries and museums include terrestrial and celestial globes, armillary spheres, astrolabes and manuscripts. Information: www.bnf.fr

Until 3 August 2019, Denver
Denver Public Library
Visualizing Colorado: Maps & Views of the Centennial State
Information: www.denverlibrary.org

Until 30 September 2019, Stanford
David Rumsey Map Center
Coordinates: Maps and Art Exploring Shared Terrain. The exhibition will feature a variety of ways in which the two porous mediums overlap in inquiries about space. Information: http://library.stanford.edu/rumsey/exhibit

Until 10 November 2019, Boston
Norman B. Leventhal Map Center
***America Transformed: Mapping the 19th Century*, Part I**
The exhibition features over 125 objects that depict the changes to land, economy, transportation and people within the United States in the 19th century. It will illustrate early settlement of western land that displaced native peoples; the country's economy diversified through coal and iron mining as well as plantation agriculture; and the development of roads, canals, steamboats and railroads that allowed for the vast expansion westward to occur. Information:www.leventhalmap.org

Until 29 December 2019, Philadelphia
The American Philosophical Society
Mapping a Nation: Shaping the Early American Republic traces the creation and use of maps from the mid-18th century through to 1816 to investigate the way maps, as both artworks and practical tools, had political and social meaning. It features historical maps, surveying instruments, books, manuscripts, and other objects to show how maps were used to create and extend the physical, political, and ideological boundaries of the new nation while creating and reinforcing structural inequalities in the Early Republic. Information: www.amphilsoc.org

Exhibitions opening

June 2019 – March 2020, Edinburgh
National Library of Scotland
Northern Lights is billed as 'a showcase of the leading role Scotland took in the intellectual and scientific progress of the later 18th century', and will feature rarely seen books, manuscripts and maps from the library's archives. Information: https://www.nls.uk

5 July 2019 –1 March 2020, Oxford
Weston Library
Talking Maps brings together an extraordinary collection of ancient, pre-modern and contemporary maps in a range of media as well as showcasing fascinating imaginary, fictional and war maps. The exhibition will explore how maps are neither transparent objects of scientific communication, nor tools of ideology, but rather proposals about the world that help people to understand who they are by describing where they are. Information: nick.millea@bodleian.ox.ac.uk

Lectures & conferences

12 July 2019, Utrecht
Workshop of the ICA Commission on the History of Cartography ***Controlling the Waters: Seas, Lakes and Rivers on Historic Maps and Charts***
Information: demhardt(at)uta.edu

14–19 July 2019, Amsterdam
The 28th International Conference on the History of Cartography
Old Maps, New Perspectives, Studying the History of Cartography in the 21st Century
Information: https://ichc2019.amsterdam/

15–20 July 2019, Tokyo
ICC2019 – 29th International Cartographic Conference
National Museum of Emerging Science and Innovation and Tokyo International Exchange Center (TIEC). Information: http://icc2019.jpn.org/

2–7 September 2019, Bucharest
The Association internationale d'études du sud-est européen ***Between the Imperial Eye and the Local Gaze***
Information: http://acadsudest.ro/sites/default/files/2nd%20circular%20%2[...]

5–6 September 2019, Oxford
International Map Collectors' Society visit to the exhibition ***Talking Maps*** at the Bodleian Library, guided by Nick Millea and co-curator Jerry Brotton, followed by the annual Collectors' Meeting at Wadham College. Information: www.imcos.org or see page 6 for further details.

2–5 October 2019, Zurich
XIV symposium of the International Coronelli Society for the Study of Globes Information: heide.wohlschlaeger@coronelli.org

10–12 October 2019, Philadelphia
American Philosophical Society Library
Conference: ***The Power of Maps and the Politics of Borders.***
Information: www.amphilsoc.org

10–12 October 2019, Stanford, California
David Rumsey Map Center
The second biennial ***Barry Lawrence Ruderman Conference on Cartography***. Following the successful first conference in 2017, the three-day event will include a keynote, research papers from a variety of scholars, and an exhibition that will debut at the event. For this year's meeting, all the papers will focus on the relationship between gender, sexuality, and cartography. Information: https://library.stanford.edu/rumsey/programs/barry-lawrence-ruderman-conference-cartography

14–16 October, 2019, Strasbourg
Faire connaître les mondes en découverte
Symposium sponsored by the Bibliothèque Nationale et Universitaire, University of Strasbourg and the University of Paris VII-Diderot. Information: www.bnu.fr/action-culturel/agenda/colloque-international-faire-connaitre-les-mondes-en-decouverte

7–9 November 2019, Chicago
Newberry Library
Redrawing the World: 1919 and the History of Cartography
The twentieth series of the Kenneth Nebenzahl, Jr., Lectures in the History of Cartography commemorates the centennial of the Paris Peace Conference that led to the signing of the Treaty of Versailles. Nine scholars from around the world will consider the geopolitical and cartographic impact of the treaty, which relied heavily on cartography in shaping its vision of the world and its future. Some cartographers worked to preserve a lasting peace with their maps, while others redrew national boundaries, seeking what some maps had taught them was rightfully theirs. While much of this cartographic work took place at the peace negotiations in Paris in 1919, its global legacy reverberates today, a century later. Lecturers and subjects are:
Mirela Altic, University of Zagreb, *Drafting the State of the South Slavs: New Cartography for a New Order*
Lindsay Frederick Braun, University of Oregon, *Mapping a New Vision of Britain's African Empire, 1919-1939*
Daniel Foliard, University of Paris, Nanterre, *'More than one Palestine': Nationalist Cartographies, the Middle East and the 1919 Peace Negotiations in Paris*
Jason Hansen, Furman University, *Cartographies of Victimhood: Envisioning the Nation after the Paris Peace Treaties of 1919-1920*
Tze-ki Hon, City University of Hong Kong, *From Connectivity to Geobody: the 1919 Moment and China's Role in the World*
Peter Nekola, Luther College, *Science and Reasoning in the Delegation Maps of 1919: Humans' Last and Greatest Attempt to Naturalize Borders, Nations, and Territories*
William Rankin, Yale University, *Mapping, Science, and War*
Steven Seegel, University of Northern Colorado, *Skin, Lines, Borders: Geographic Expertise and the Mapping of Eastern Europe in 1919*
Penny Sinanoglou, Wake Forest University, *Lines of Control, Lines of Contestation: Cartography and British Imperial Politics in the Middle East Mandates, 1919–1948*
The Nebenzahl Lectures are free and open to the public. Information: www.newberry.org

14–17 November 2019, Gainesville
University of Florida
The Caribbean: A Cultural Encounter, Annual Meeting Society for the History of Discoveries.
Information: https://networks.h-net.org

16–17 November, Valetta,
Presidential Palace, Malta
The **Malta Map Society** will celebrate its tenth anniversary with a seminar and conference under the working title *Imago Melitae, 2019*. Information: https://mmaltamapsociety.mt

Into the future

April 2020, Strasbourg
15th International Atlas Day
This will be held over Friday and the weekend in the last or penultimate week of April. This is the first time that the event will be held outside Germany. The programme is not yet fixed but amongst the planned proceeding it is hoped that a visit to the European Parliament can be arranged. Information: francis.fischer90@sfr.fr

21–23 April 2020, Istanbul
8th International Symposium on the History of Cartography
Mapping the Ottoman Realm: Travellers, Cartographers and Archaeologists
This symposium is being jointly organised by the ICA's Commission on the History of Cartography and the German Archaeological Institute (DAI), Dept Istanbul. The symposium is open to everyone interested in the (former) Ottoman countries during, but not limited to, the 16th–20th centuries. Information: https://history.icaci.org/istanbul-2020

6–9 September 2020, Sydney
State Library of New South Wales
The next **International Map Collectors' Society Symposium** (IMCoS) will celebrate the 250th anniversary of Cook's discovery of the east coast of Australia. A post-conference trip to the National Library of Australia in Canberra is planned.

Map & book fairs

27–29 September 2019
San Francisco Map Fair
The San Francisco Map Fair is sponsored by the History in Your Hands Foundation (HIYHF), a non-profit organisation with a mission to provide classrooms with authentic, historical objects in an effort to help foster a more enriched learning experience. Information: https://sanfranciscomapfair.com

9 November 2019
18th Paris Map, Globes, Scientific Instruments Fair
Hôtel Ambassador, 16 Bd Haussmann,75009 Paris
Information: www.map-fair.com

EXHIBITION REVIEW

Imaginary Cities

Ljiljana Ortolja-Baird

Imaginary Cities is an exhibition of few works – just four art installations – which combines digital technologies with traditional fine art processes. The exhibition is the culmination of Michael Takeo Magruder's time as artist-in-residence at the British Library. He is a visual artist who works with new media including real-time data, digital archives, immersive environments, mobile devices and virtual worlds and whose work has been showcased worldwide. *Imaginary Cities* has been created in collaboration with the British Library Labs (BL Labs) which was set up in 2013 to promote the Library's digital collections and data. Since its inception it has worked with researchers, educators, and artists from around the world on collaborative projects covering subjects as diverse as fashion, Indian print, video games and artificial intelligence.

Drawing on the British Library's online One Million Images Scanned from Books collection Magruder set out to explore how large digital repositories of historical cultural material might be used to create new digital artworks that would resonate with twenty-first century audiences. "As I delved into the archive of one million images, searching for precious moments and unknown fragments within the vast digital collection, I began to think about how I could use not only the image data to generate objects and experiences, but also the metadata like view counts, favourites and tags. When an archive becomes digital and is opened to the world it becomes a 'living' structure that is constantly changing as people connect to it, use it, and leave traces of themselves. This, from an artistic standpoint, became most interesting to me. And so, I set out to create artworks that would capture and embody this essence; creations designed by me and my collaborators, but ultimately dictated by the choices of passers-by whom we would never know or meet." Sifting through thousands of images Magruder finally settled to work with nineteenth-century urban maps as his source material; these he would digitally transform into fictional cityscapes.

The first installation *Imaginary Cities – New York, Paris, London and Chicago* is a series of algorithmically generated map images. They are physically represented as four large black squares on which the re-imagined cities have been printed in precious metals. They hang side by side in traditional gallery style. Their sources, each a fold-out map from a guide book, lie in a glass cabinet beneath: 'A Plan of the City of New York' (H.B. Dawson, *New York City During the American Revolution*, 1861); 'A Plan of London and its Environs' (Samuel Lewis, *A Topographical Dictionary of England,* 1834); a map of Paris from an 1872 guide book of the city; and a street plan of Chicago from *Chicago and it Suburbs* by Everitt Chamberlin.

By manipulating the digitised BL maps and their associated metadata Magruder has created four fictional cities. They are kaleidoscopic in their design, appearing to unfold outwards in recurring symmetry from a nucleus shaped like a Greek cross, a square, or quatrefoil. The left half of the city mirrors the right, the bottom the top, opposite corners mirror each other – all things are equal. While these visualisations may be read as utopian, the artist's choice to render them in precious metals – silver and 24-carat gold – shining out from a dark ground, evokes the idea of a sacred city. Magruder refers to them as mandala city plans, referencing Buddhist and Hindu symbolism in which the mandala is the 'floorplan' of the universe.

A second work, which successfully explores, and resolves, the tensions of the analogue and digital worlds, is an imagining of an 1870 map of Chicago (see opposite). Constructed in twenty panels, reminiscent of a pocket map that has been unfolded, it combines traditional materials with cutting-edge digital technology. Magruder describes it as a 'physical data sculpture that has been made through combining modern digital fabrication processes and traditional woodworking technique'. Chicago has been translated into an intricate

On the wall: *Imaginary Cities London* is a real-time triptych with soundscape. On the floor: *Imaginary Cities Chicago*, has been laser engraved on sapele hardwood with UV light reactive inlay. Michael Takeo Magruder, Imaginary Cities at the British Library, 2019. Photographs by David Steele ©Michael Takeo Magruder.



vector pattern and laser engraved on sapele, an African hardwood. The engraved lines are filled with fluorescent UV reactive pigment giving the impression of a printed circuit board.

Imaginary Cities may be a step too far for some traditional map enthusiasts or those who expect to see something along the lines of Middle Earth as penned by Tolkien, or the cartographantasies of other novelists. However, in Magruder's multiple manipulations of, and references and allusions to, the nature of maps and the mapmaking process, he reiterates the enduring interest we have in old maps and continues to provoke the question, what is a map? He is not alone in engaging with maps to explore space, both geographical and imaginary. There are numerous contemporary artists who have been inspired to use and adapt maps in their work, several of whom have been featured in the journal, and the subject of the 'shared terrain of maps and art' is currently being explored at the David Rumsey Map Center, Stanford in an exhibition and accompanying symposium. While the exhibition may challenge expectations, its role in introducing the public to the creative possibilities of the Library's digital collection must be applauded.

The exhibition runs until 14 July 2019.

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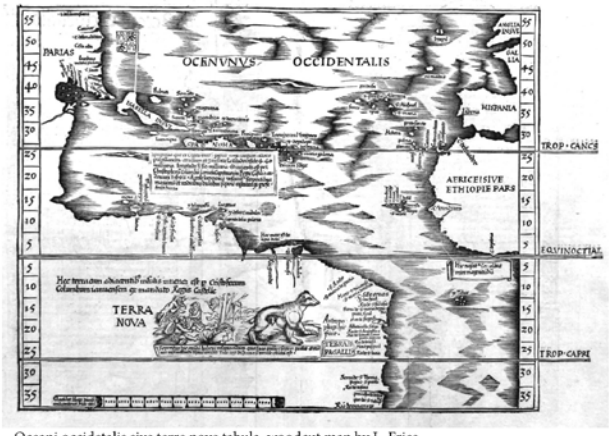
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Oceani occidetalis sive terre nove tabula, woodcut map by L. Fries from the Ptolemaeus edition by J. Grüninger, Strasbourg, 1525

BOOK REVIEWS

Shanghai chengshi ditu jicheng 上海城市地图集成 **(Complete atlas of Shanghai antiquated maps)** *by Sun Xun* 孙逊 *and Zhong Chong. Shanghai: Shanghai shuhua chubanshe, 2017.*
ISBN 9787547914649. 3 volumes (Vol. 1 1504–1918, Vol. 2 1918–1937, Vol. 3 1937–1949).
In Chinese, with English parallel volume and chapter titles. RMB 3,800.



This lavishly published atlas assembles 217 beautifully reproduced maps of Shanghai ranging from the first map of the city, printed in a 1504 gazetteer, to the last map printed before the liberation of the city (namely its takeover by the People's Liberation Army) in May 1949.

Situated in what was then (as it is now) the economic core of China, the lower Yangtze delta, Shanghai remained until the mid-nineteenth century a minor trading centre until the treaty of Nanjing which concluded the First Opium War (1839–1842) and gave the main Western powers access to four new treaty ports alongside Canton. Among them was Shanghai which soon became the most important, supplanting the previous regional metropolis of Suzhou and becoming the real economic and cultural centre of China between 1850 and 1949.

In the thirty years of hardcore and often xenophobic communism following the establishment of the People's Republic of China, Shanghai's connections to capitalism and the West made its previous history suspicious in the eyes of the ruling elites, but it is now being newly celebrated in this collection as well as in all realms of academic and popular culture.

The atlas editors, two scholars of historical geography and cultural studies working at the Research Centre for Urban Culture of Shanghai Normal University, have been working at the project for five years, from 2012 to 2017.

As they state in the preface, China is now undergoing the largest urban transformation in human history, and yet the attention given to urban maps in Chinese historical studies has been until very recently minimal. Chinese history is traditionally concerned with the analysis of texts and while there has always been a great abundance of visual materials, many of them in printed form, only in the last few years has a visual turn in historical studies been taking place, and maps are only beginning to be a part of it.

This limited attention is reflected also in the careless handling of cartographic materials in libraries, museums and archives. On visits to these repositories the editors often found that the maps were stacked in paper baskets or casually stored in a corner.

But if we judge Chinese contemporary cartographic studies by the high scholarly and production standards set by this book and by some other recent publications on historical cartography, then this disregard of maps is coming to an end and it will soon be possible for a Western audience to partake of this visual feast.

Now, this is only partially possible with the present volume, as only the titles of the ten main sections is given in English, and the only map titles given in Western languages are the original titles of maps of Western production, around one third of the total.

The Western reader might therefore want to use this Atlas in conjunction with the 'Virtual Shanghai Project' website, a research project in social sciences and humanities supported by the National Research Agency in France. The website is useful both for its map database https://www.virtualshanghai.net/Maps/Collection?rp=1200 as well as for its wider content https://www.virtualshanghai.net/.

The editors decided to include in their search Chinese, Japanese and Western maps, held in China

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and abroad. In the end, 217 out of 400 maps were selected, subdivided in ten main categories:

1) Illustrated maps in local gazetteers (14 maps from 1504–1918)
2) Single sheet manuscript maps in modern times (10 maps from 1850–70, with 3 undated, probably spurious maps)
3) Maps surveyed and produced by foreigners in Early Modern times (1840s to 1901)
4) Maps surveyed and produced by Chinese in Early Modern times (1850s to 1901)
5) Maps of Shanghai in the Late Qing period (1902–10)
6) New Maps of Shanghai in the Late Qing and Early Republic of China period (1910–18)
7) Maps of Shanghai in the later period of the Peking government of the Republic of China (1918–1927)
8) Maps of Shanghai in the early period of the Nanjing Nationalist Government (1927–37)
9) Maps of Shanghai during the Anti-Japanese War (1937–45)
10) Maps of Shanghai after the Anti-Japanese War (1945–49)

Maps in categories 1 to 4 are chronologically arranged within their categories; categories 5 to 10 follow a straightforward chronological sequence.

For the first two categories, and to a minor extent also for categories 3 and 4, the editors attempted to include all the relevant maps. For maps after 1901 they operated a selection, in principle excluding maps of a scale below 1/5000 and above 1/40000, maps of parts of the city or of the wider region, as well as military, transportation or meteorological maps. Among Western maps, only English, American and French maps have been included.

A standard entry gives the title of the map (translated in Chinese if in a Western language), the author, the publisher, the year of drawing or publication, the printing form, the size of the frame, the scale, and the holding repositories. It is then followed by a description of the map and its historical significance, on average spanning one or two paragraphs, but taking up two or three times more in special cases.

The emphasis is on urban history and on cultural significance and not on carto-bibliographical analysis; authors are generally just identified by name, without mentioning their biographical data, and different imprints are not systematically discussed, unless when relevant for historical discussion.

A Western collector or dealer of maps of Shanghai therefore, even if he could read certain entries, might not derive much from them, especially as far as French maps are concerned, for example in the case of Gadoffre's 1902 'Chang-hai et Environs'.

On the other hand, new light is shed on early maps such as 'Shanghai – English Quarter', held at the United Kingdom Hydrographic Office, previously dated 1855 but shown, on the basis of the analysis of cadastral data, to have been drawn between 1849 to 1852.

This careful cultural analysis is especially illuminating for the maps covered in the first volume (1504–1918), as during the second half of the nineteenth century, the formative stage of modern Shanghai, the juxtaposition of Western and Chinese mapping of the city shows all the power of maps in articulating political and cultural differences. The Chinese gazetteer maps of 1871 still show the Chinese Walled City in isolation, ignoring the existence of the burgeoning foreign settlements and concentrating on traditional markets, temples and government offices. Contemporary Western maps instead mainly focus on the waterfront and ignore the Chinese Walled City, just as if two completely different Shanghai were reflected in two different mapping traditions.

On the other hand, the first Chinese surveyed map, the 1875 map entitled 'Complete map of the Shanghai district town, its immediate surroundings and the Concessions' (Shanghai xian chengxiang zujie quantu 上海縣城廂租界全圖) is a visually stunning fusion of Chinese and Western perspectives representing the entire city in all its parts, beautifully reproduced in a three-leaf fold-out.

And here one has to congratulate the publisher for the beautiful production: three folio-size sturdy volumes imitating traditional Chinese thread-bound books with ingeniously designed fold-outs which can flexibly accommodate all the maps covered, and whose paper and colour quality is well worth the 3,800 RMB price (around 500 euros).

This is a set worth having, not only for map libraries, but also for dedicated map lovers, East and West.

Marco Caboara, Hong Kong



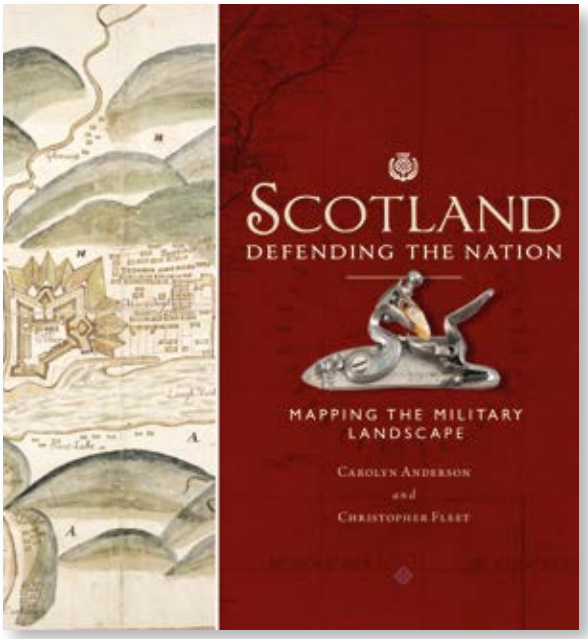
Antonio Lafreri [Carta Marina] Olavs Got. Benigno Lectori... 1572.

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Scotland Defending the Nation, Mapping the Military Landscape *by Carolyn Anderson and Christopher Fleet. Edinburgh: Birlin, 2018. ISBN 9781780274935. HB, 232, colour illustrations & maps throughout. £30 STG.*



What a magnificent book. With well-researched plans and maps of military installations, this book tells the story of Scotland valiantly defending itself against its enemies, primarily the English, but also the Catholic countries of France and Spain who, after the pope's fatwa against renegade Protestant England, determined to save England for the old religion. The nearest catholic country was Scotland so it was natural that they should invade there.

The book is an impressive piece of scholarship. There are plans and maps of eighteenth-century barracks and military roads as well as contemporary battle plans of sixteenth- and seventeenth-century battles.

We are very fortunate that so many of these old sketches and plans have survived, as they are a treat to the eye for any map lover. The book does a great service to the history of mapmaking in telling the story of the successful rise of the Board of Ordnance, which later became Ordnance Survey, who, as well as its main duty of storing and delivering arms and ammunition for the army and navy, drew and supplied maps. They gave prominence to surveys and surveyors. During a recent IMCoS symposium in the Philippines, two surveyors, one Australian and the other from New Zealand, made the point very strongly that James Cook's extraordinary mapping ability was a direct result of his surveying skills.

After the 1745 Jacobite uprising, the Board of Ordnance set up a repository of maps with draughtsmen making copies of the maps for commanders in the field. It was called, 'The Drawing Room' and it was a civilian company, which sounds extraordinarily modern for an eighteenth-century enterprise.

The book begins with John Hardyng's fifteenth-century manuscript map of Scotland which, the authors say, depicts Scotland, 'almost as an island, *perhaps* reflecting the perceived political and ethnic division with England'. This 'perhaps' crops up rather too frequently. What is surely more likely is that Hardyng's maps (which clearly did show a land border with Scotland) merely reflected the terrain an invading army might encounter and nothing more. Too many perhapses are neither sensible nor academic.

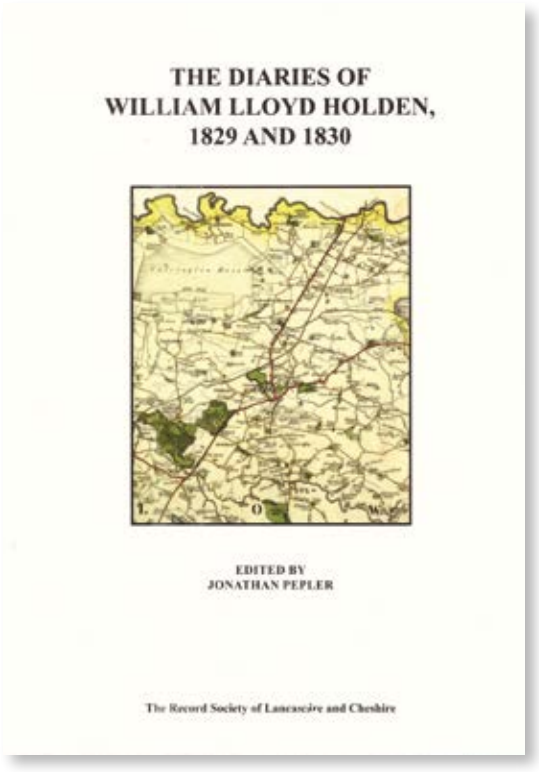
Similarly, there are a few too many assumptions. We are told that James I voyaged around the north of Scotland using a very accurate map drawn by, 'it is assumed, the expert Scots pilot Alexander Lyndsay'. This assumption quickly becomes a fact, with the tale of how his rutter came into French hands and the part it played in the French invasion of St Andrews.

In the twentieth century, the German maps of World War I and World War II are fascinating, as are the Cold War Soviet maps. Possibly the best military maps ever drawn, the Soviet maps show everything a military commander needs to know, at a glance, from standardised colour coded industrial, residential and military areas to the widths and heights of bridges. Local names are in phonetic Russian, we are told, so that Russians could at least make a sound recognisable to local people (they actually did this all over the world, not just Scotland, as it is the easiest way to devise a Russian name for a local place names). The Soviet Union began mapping the world from soon after the revolution in 1917 and the latest Soviet battle plans showed that Soviet forces would stop at the Rhine and not invade Britain at all.

This book has some excellent maps and drawings which any map lover will surely appreciate and enjoy. How much more enjoyable it would be if the stories around them did not miss out so much of the context in which they were drawn.

John Moore, High Wycombe, UK

The Diaries of William Lloyd Holden, 1829 and 1830 *edited by Jonathan Pepler. The Record Society of Lancashire and Cheshire, 2018. ISBN 978 0 09935731 2 5. HB, x, 291, illustrated. STG £30.00.*



In 2015 Jonathan Pepler solved, in the pages of *Imago Mundi*, one of the great mysteries of nineteenth-century English map-making: who was 'A. Bryant'? Between 1822 and 1835 Bryant published maps of thirteen English counties at scales between one inch and one and a half inches to one mile (1:63,360-1:42,240). That apart, he languished in obscurity, in contrast to his commercial rival, Christopher Greenwood, who mapped all but six English counties, plus some Scottish and Welsh ones, mostly at the one-inch scale, between 1815 and 1833.

The answer to the 'Bryant mystery' came largely from the diary of one of his employees, William Lloyd Holden (1805-87), and this enabled the identification of 'A. Bryant' as William Andrewes Bryant (1799-1878), assisted by his brother, Charles William (1789-1849). (Does 'A. Bryant' mean 'one or other Bryant: take your pick'?) One hesitates to describe Holden as a surveyor: he emerges from the diary as a collector, copier and reducer of estate and other plans, and a part-time canvasser for subscriptions, working at this time mainly in Cheshire and the West Riding of Yorkshire. Actual 'survey' seems to have consisted as much of adding to compilations as of measurement or sketching on the ground.

These diaries are of value not least for giving day-to-day context of working in the field, which is necessarily absent from any published maps. They also give insight into the cost of living and the comfort or otherwise of travel and accommodation. For historians of the technical and practical aspects of cartography they are especially important for revealing the extent to which existing mapping was used. In one sense this is nothing new. J.B. Harley cited Greenwood's appeal for maps in his *Christopher Greenwood: county mapmaker* (1962), but your reviewer, at least, was sceptical of the extent to which such a method could have worked: how readily could one ascertain what actually existed, how many estate maps were there, how willing were their owners to allow them to be copied and, not least, how long would it have taken to make the necessary copies and reductions to published scale? Now we have proof positive that this method indeed worked and was used extensively, and we are on the way to knowing how Bryant and Greenwood managed such an outturn of mapping in comparison to the official Ordnance Survey with its apparently much better resources. It also answers the question of how Bryant and Greenwood obtained their boundary data: their depictions were far more detailed than was that of the Ordnance Survey at this time, and when the Survey did come later to record this data, it was a significant extra expense.

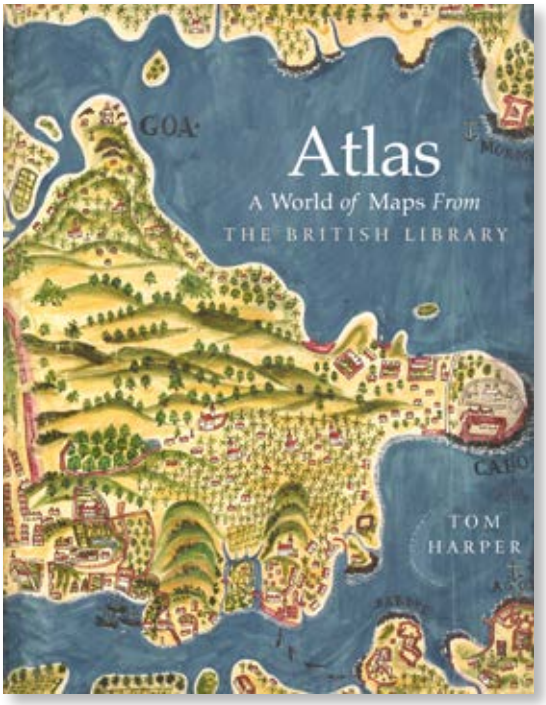
Holden's diaries do not provide the whole answer to the question of how the Bryant maps were made: it would have been necessary to have some sort of skeleton on which to 'hang' the numerous plans which workers such as Holden rounded up. Other projects, employees and the Bryant brothers themselves appear in the pages of the diary, not always in a good light: William Andrews Bryant was not the most punctual of payers, and it is unsurprising that Holden should have toyed with other employment. We do not know when he parted from Bryant, but by 1841 he was a brush manufacturer in London, and by 1882 he had added accountancy and property transfer negotiation to his portfolio.

These diaries are strongly recommended both for an insight into the practicalities of the final years of unofficial county map-making in Britain, and as a spur for further research, not least into how the apparently disparate constituents of Bryant and Greenwood

maps were moulded into coherent and planimetrically satisfactory wholes.

Richard Oliver, Exeter, UK

Atlas – A World of Maps From the British Library *by Tom Harper. London: The British Library, 2018. ISBN 9780712352918. HB with dust jacket, 272, 133 maps & images. 30 STG.*



In recent years quite a number of lavishly-illustrated books on antiquarian maps have been published, and *Atlas* by Tom Harper, Lead Curator of Antiquarian Maps at the British Library, is an outstanding addition to the genre.

As Harper explains in his introduction, the name 'atlas' for a book of maps covering all, or part, of the world comes from Gerhard Mercator's posthumous *Atlas* of 1595 which was dedicated to the eponymous Titan, said to have been the geographer-king of Mauretania. But 'this is an atlas with a difference… because the maps in it were made by different people at different times for different reasons. You could almost call it an atlas of time travel.' The brief introduction goes on to discuss the value of older maps, as images, as objects, and as carriers of messages about the representation of space and the perception of time. The book also explores the historical significance of maps; the deeper meanings that are to be found therein; the ways in which the significance of individual maps can change over time; and the reasons we continue to be fascinated by old maps.

Over ten chapters covering the universe and the world, the five continents (deliberately in alphabetical order to avoid the Eurocentricity of most atlases), the seas and oceans, celestial maps and fantasy worlds, the book features 133 maps and views dating from the twelfth to the twenty-first centuries. The text, opposite or alongside the high-quality photographs, is informative, concise and a pleasure to read regardless of the depth of knowledge the reader may already have on the subject of cartography. Indeed, *Atlas* is as much a wonderful introduction to the world of antiquarian maps for a novice enthusiast as a source of esoteric cartographic information for seasoned collectors.

While some of the maps may be familiar, the majority are gems that I have not encountered before. In the first few pages the reader finds a cosmographical map of the Jain universe (1830); the miniature 'Psalter' *mappa mundi* (*c.*1265); and a Venetian cordiform world map with the text in Ottoman Turkish (1559/90). In the section on Africa we see Horatio Nelson's left-handed sketch of the Battle of Aboukir Bay (1803), and a vivid plan of Mombasa from the 'Livro do Estado da India Oriental' by Pedro Barreto de Resende.

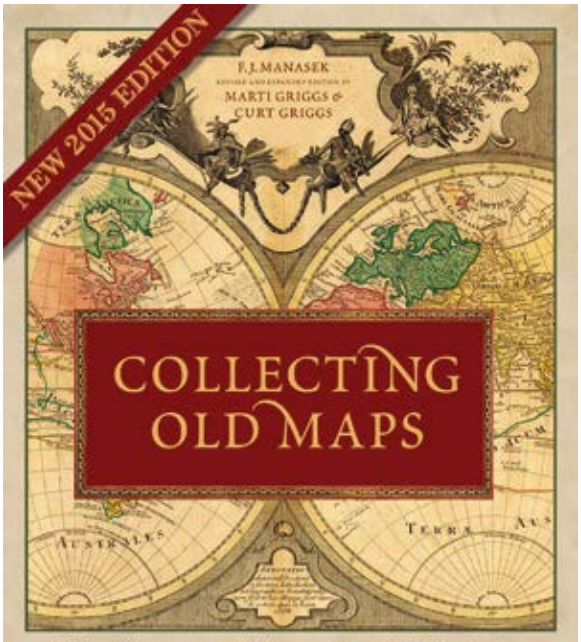
Maps of the Americas include the secret example of John Mitchell's 'A Map of the British Colonies in North America' used by the British delegation negotiating the Treaty of Paris in 1783; a spy map of Maine by George Sproule (1772) presented to George III; a contemporary copy of a Native American deerskin map of North Carolina (1721); Giovanni Matteo Contarini's *Mundo spericum* (1506), the earliest surviving printed map to show any part of the Americas; and a vellum Thames School chart of the Magellan Straits commissioned by Sir John Narbrough on his return to England in 1671.

Asia is well represented by *inter alia* William Camden's hand-drawn copy of Matthew Paris's map of the Holy Land (*c.*1600) centred on Acre; a detailed but unfinished map of Shahjahanabad (Old Delhi) made by Indian draftsmen in the 1850s; a printed, 41-sheet map of China, seven metres wide, produced by the Italian Jesuit Matteo Ripa in 1719; two of the earliest (*c.*1823) sea charts of Singapore, incorporating details of the new colony; and a Japanese map of Nagasaki (*c.*1680)

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acquired by Sir Hans Sloane. Also illustrated are the preparatory artwork by H.T. (Bert) Hawes for the topographic map of Australia in *Odhams New Illustrated Atlas of the World* (1956) and a humorous cartographic postcard of New Zealand (*c.*1990).

The genesis of the British Library's map collection was the amalgamation of four private libraries (including Sloane's) when the British Museum was founded in 1753. As well as a long history of purchases, the collection has grown with the addition of other major acquisitions, notably the Topographical Collection of King George III, the map collection in the India Office Records, and maps from the War Office Archive. As a result, the chapter on Europe (including Britain) is the longest, with forty-eight entries.

A hand-painted 'Plan of the Property belonging to the Friends in the Township of Darlington' (1849) displays the civic pride and fine houses of the Quaker fraternity. The map of Scotland and its castles (1437) by John Hardyng was included in his chronicle, presented to Henry VI, as an invasion plan. The fragmentary map of Portugal (*c.*1300) is from the earliest of the British Library's versions of Claudius Ptolemy's *Geographia*. A plan of the Battle of Corunna in January 1809 was printed, ten days later, by the Quartermaster-General's Office on Britain's first lithographic press. Cornelis Anthoniszoon's map of Amsterdam (1544) celebrates the city's emergence as 'the Venice of the North'. The Eichstätt map, a 1530 copy of a fifteenth-century map by Nicolaus de Cusa, is claimed to be the earliest modern map of Central and Eastern Europe based on first-hand travel accounts.

As well as flat, two-dimensional maps, a number of three-dimensional objects are included. The 'Chinese Globe' of 1623, hand-painted by Jesuit missionaries in Beijing, is remarkable because it shows the world as depicted by Abraham Ortelius but with the text entirely in Chinese. John Spilsbury's map of Africa (1767) is one of the very first commercially produced jigsaws. The three-dimensional World War I relief maps of the British section of the Western Front, known as 'Haig Models', were made to capture the battlefield terrain. The fantasy map of 'Breakfast Island', produced by Cyril Phillips to adorn a breakfast tray in 1953, captures the evolving, fractious mood of post-war Britain.

This handsome book exhibits the usual high-quality graphics and printing we expect from the British Library, with excellent reproduction of the images. One minor criticism is that the titles and details of the maps are not shown next to the photographs or below the text, but have been relegated to a separate 'List of Maps' (not always in the correct order) at the back of the volume. And, despite the clearly meticulous copyediting, there are a few errors including Mauritania for Mauretania; Peter Apian's map of the world 'dated 9 November 1530' listed as 1540; and the 'Topographia dela Ciudad de Manila', stated in its title to be by Antonio Fernandez de Roxas, catalogued under Hipolito Ximenez (who is named as the engraver).

This is an exceptionally attractive and informative publication, to be highly recommended to anyone interested in antiquarian maps. Given that he has over four million in his collection to choose from, we must hope that in due course Tom Harper will produce a second volume of similar cartographic treasures from the British Library.

Peter Geldart, Manila, The Philippines

BOOKS RECEIVED

The Great Explorers and their Journeys of Discovery *by Beau Riffenburgh in association with the Royal Geographical Society. London: Andre Deutsch, 2017. ISBN 9780233005270. HB, 208, 250 illustrations. STG £25.*

The book opens with the familiar explorers of the Golden Age and is followed by six chapters, each one dedicated to the explorers of Asia, the Americas, Australia and the Pacific, the Arctic and Antarctica. The strength of the book is its visual content; it is richly illustrated with maps, photographs and paintings and letters, making it an ideal introduction to the subject.

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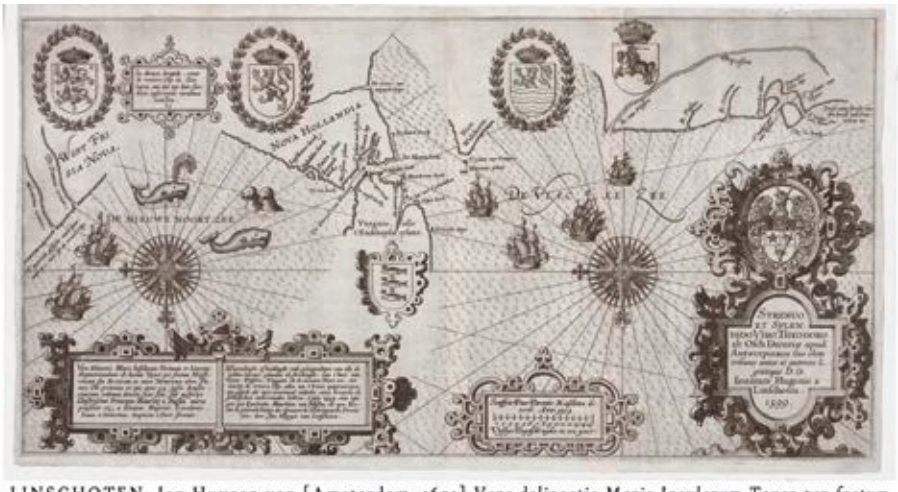
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Title	Author	Date	Publisher	£
Rare Maps of Pakistan	F.S. Aijazuddin	2000	Lanhore, Ferozsons Ltd	30
AS Fronteiras de Africa (Portuguese text)	Barros/Amaral/Santos	1997	Comissao Nacional	7
Cartografia de Lisboa Séculos XVII a XX (Portuguese text)	M.A. Bastos/A.C. Leite	1997	Comissao Nacional	7
Cartografia Rara Italiana: XVI Secolo. L'Italia ei suoi territori	Stefano Bifolco & Fabrizio Ronca	2014	Antiquarius Srl	50
Deliniatio Lituae (Lithuanian and English text)	A. Braziūniene	2009	Rolandas Valiūnas	18
Envisioning the City: Six studies in urban cartography	David Buissert	1998	Chicago Univ	12
Historic Parishes of England & Wales: An electronic map of boundaries before 1850 with a gazetter and metadata	Roger Kain & Richard Oliver	2001	History Data Service	10
La géographie de Ptolémée en Occident (IVe-XVIe siècle) (French text)	Patrick Gautier Dalché	2009	Brepols	30
Lugares e Regiões em Mapas Antigos (Portuguese text)	I. Sid/S. Daveau	1997	Comissao Nacional	6
Cartografia e Diplomacia no Brasil do Século XVIII (Portuguese text)	M.J. Guedes/I. Guerreiro	1997	Comissao Nacional	6
Maps of the Mediterranean Regions published in the British Parliamentary Papers, 1801–1921	S. Gole	1996	Bank of Cyprus Cultural Foundation	50
Cartographic Encounters: Perspectives on Native American mapmaking and map use	G.M.Lewis, Ed.	1998	Chicago University Press	45
Mapping Boston (hardback)	K. Krieger, D. Cobb et al, Eds	1999	Boston, Leventhal Family Foundation	25
Jean Guerard's Atlas of America (English translation included)	K. Özdemir	2004	Dönence, Istanbul	10
Macau: a cidade e o porto (Portuguese text)	J.M.M. Pereira	1997	Comissao Nacional	5
Heaven and Earth in the Middle Ages	R. Simek	1992	Woodbridge, Boydell & Brewer	25
Antique Maps of the British Isles	D. Smith	1982	London, Batsford	15

Title	Author	Date	Publisher	£
New Found Lands: Maps in the history of exploration	P. Whitfield	1998	The British Library	12
Japanese Maps of the Edo Period	K. Yamashita	1998	Kashwashobo	30
Five Centuries of Geographical Maps of Croatia (Croatian and English text)	A. Pandžić	1988	Muzei za Umjetnost i Obrit, Zagreb	5
Braun & Hogenberg's City Maps of Europe: A Selection	John Goss	1991	Studio Editions	20
An Atlas of Rare City Maps, Comparative Urban Design, 1830–1842	M.C. Branch	1997	NY, Princeton Architectural Press	15
Historical Atlas of SW England	Roger Kain & William Ravenhill	1999	University of Exeter Press	40
The Gough Map: The Earliest Road Map of Great Britain	Nick Millea	2007	Bodleian Library	20
Mapping the Silk Road and Beyond: 2,000 Years of Exploring the East: 2,000 Years of Exploiting the East	Kenneth Nebenzahl	2011	Phaidon	50



LINSCHOTEN, Jan Huygen van [Amsterdam, 1601] *Vera delineatio Maris Insularum Toxar per fretum Nassoviacum seu Arcticum in mare Tartaricum ultra flumen Obi pretense eo quo anno 94. . .*

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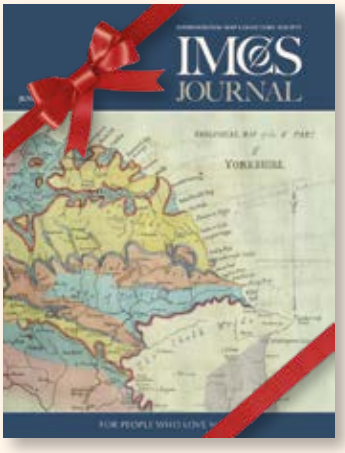
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Quarter page (same copy)	£365	-
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Full page	£380	-
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Advertisement formats for print

We can accept advertisements as print ready CMYK artwork saved as tiff, high quality jpegs or pdf files.

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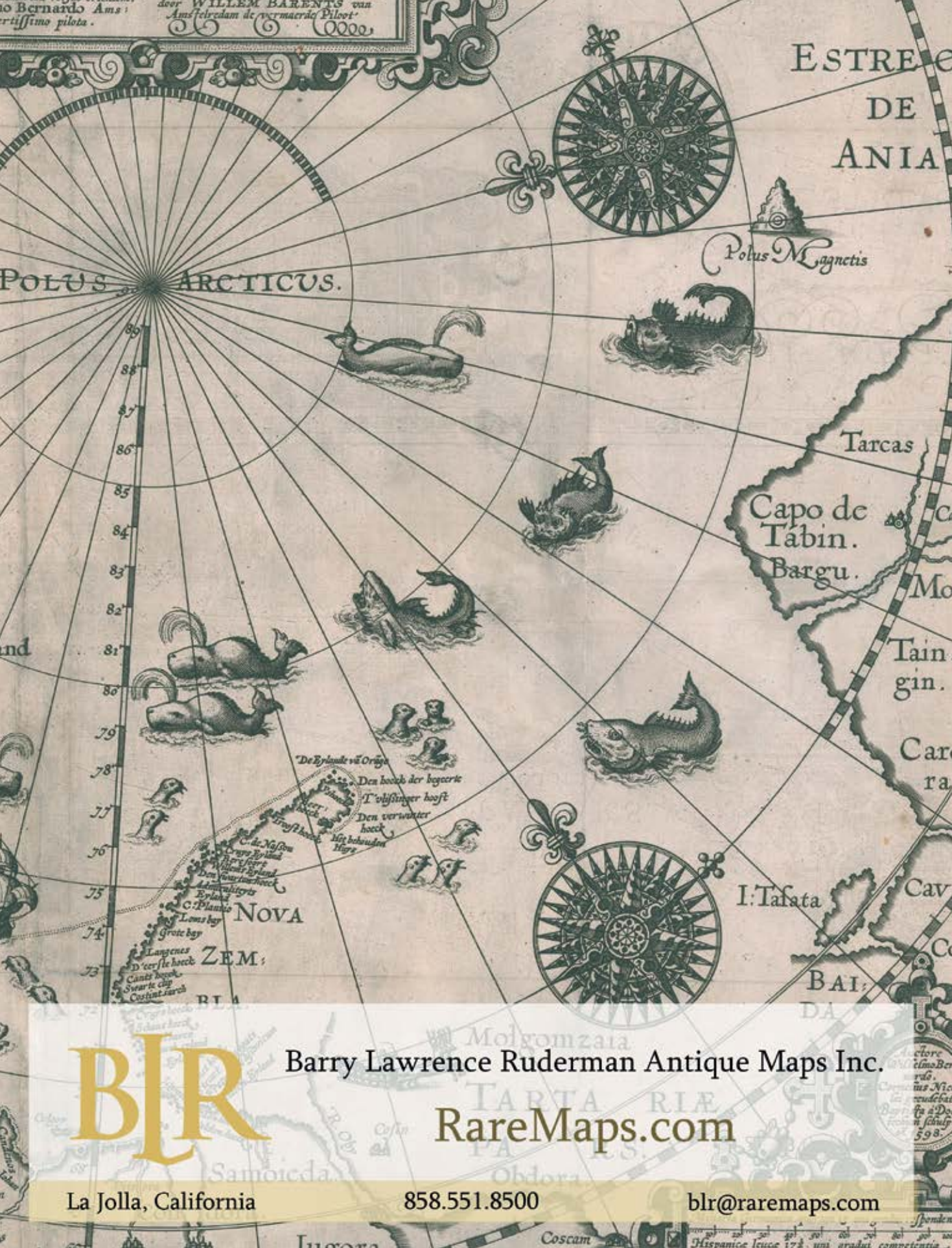
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