

AHRC TOWARDS A NATIONAL COLLECTION

The Congruence Engine: Potential for the creation
useful linkage of UK industrial history collections

Tim Boon for Genus Cultural Heritage Digitisation Forum 2026,
Hatfield, 3rd September 2026



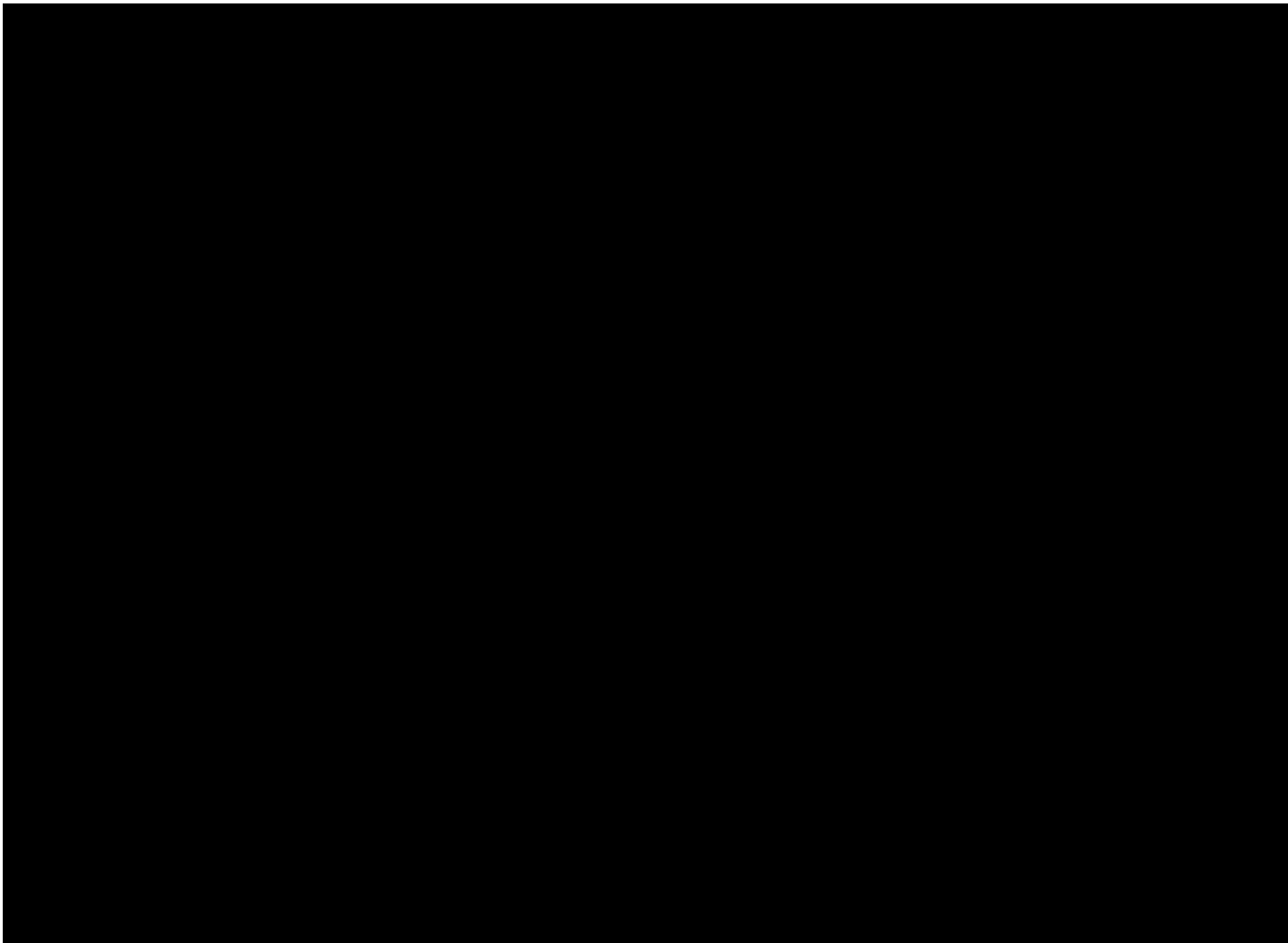
**TOWARDS
A NATIONAL
COLLECTION**



**Arts and
Humanities
Research Council**

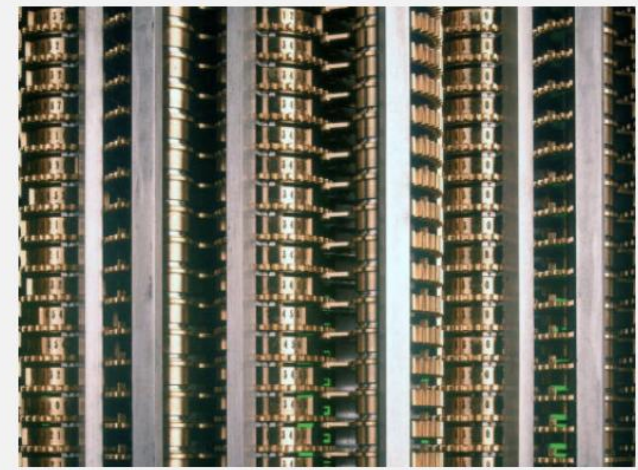
**SCIENCE
MUSEUM
GROUP**

Congruence Engine introductory film



KEY PROJECT DATA

- £2.9M three-year research project, the biggest ever for the Group. 1 of 5 Discovery Projects.
- Hit priorities of SMG and AHRC / UKRI 'Towards a National Collection' funding.
- Explored what it will be like when it is possible to work across the UK's collections, rather than silo-by-silo
- Is on territory of industrial history and collections, especially: textiles, energy and communications.
- 15 Co-investigators, 15 researchers, and 15 partners / participating organisations including 4 universities, National Museums, Local Museums, BFI, BBC History, Historic England



THE CONGRUENCE ENGINE: DIGITAL TOOLS FOR NEW COLLECTIONS-BASED INDUSTRIAL HISTORIES

The Congruence Engine is a three-year research project starting in November 2021 that will use the latest digital techniques to connect industrial history collections held in different locations.



TOWARDS
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Arts and
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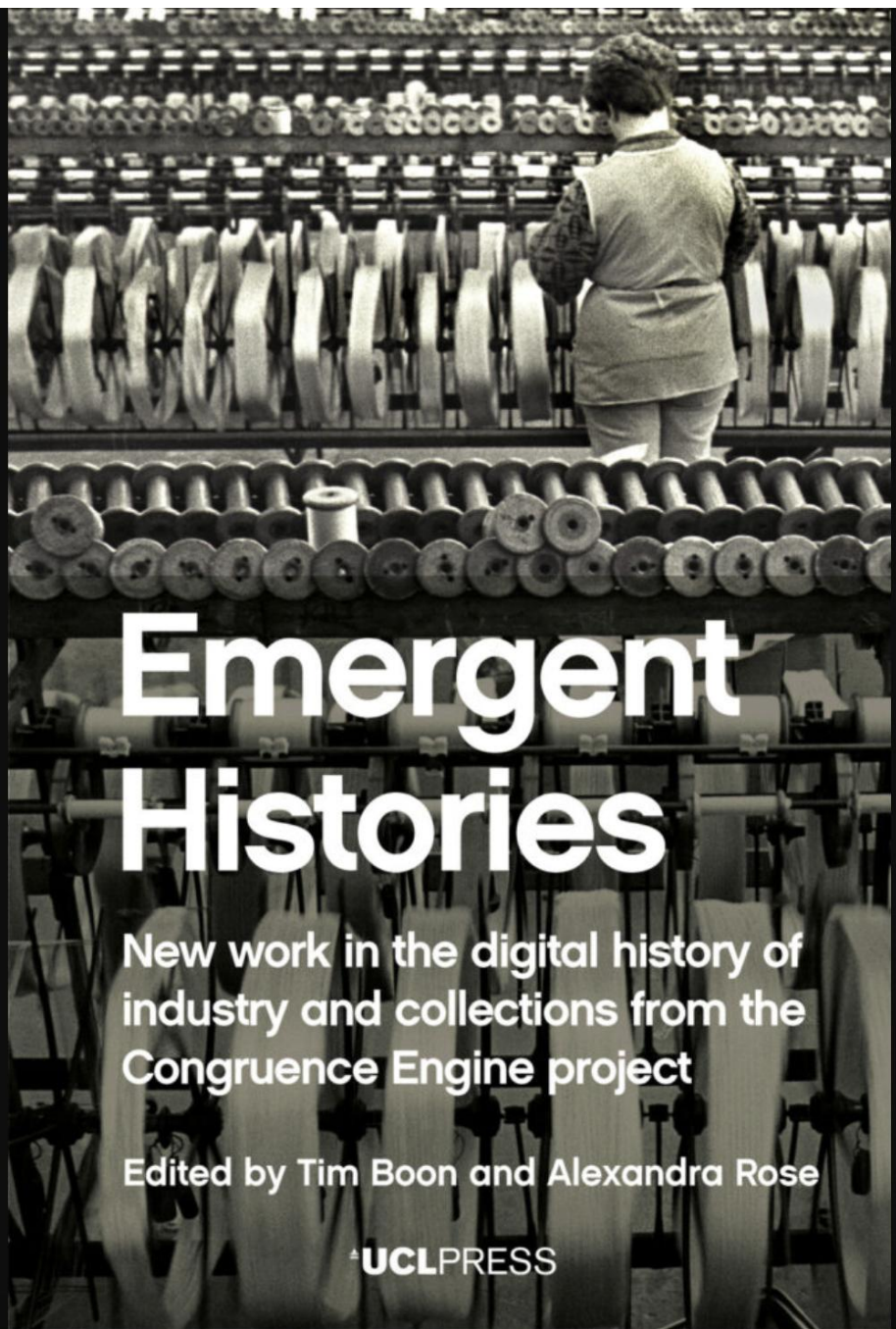
FINAL REPORT DISCOVERY PROJECTS



Congruence Engine: Digital Tools for New Collections- Based Industrial Histories

Science Museum Group | University of Leeds
University of London | Historic England
University College London | University of Liverpool
British Film Institute

January 2025



Forthcoming book and existent journal SI

SCIENCE MUSEUM GROUP JOURNAL

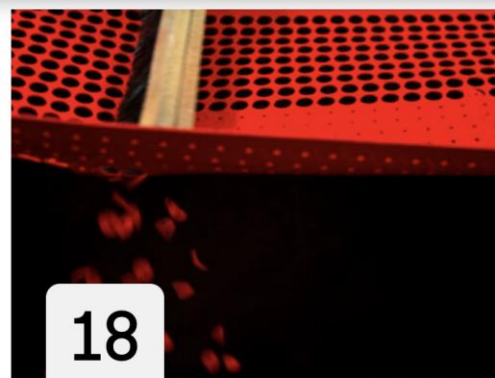
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AAa



Autumn 2022

Congruence Engine

We start 2023 with a double-sized special issue showcasing the Congruence Engine project. Part of the Arts and Humanities Research Council (AHRC) Towards a National Collection suite of discovery projects, Congruence Engine explores how linking the nation's collections using digital tools can enable new kinds of research and practice. Like the project itself the issue [...]

Congruence Engine in action

Helen Graham and Arran J Rees

The Congruence Engine Manifesto

Alex Butterworth

History of textiles and the Congruence Engine

William Ashworth

Connecting places and collections

Ben Russell and Wayne Cocroft

Energising connections in museum collections

Graeme Gooday, Kylea Little, Bernard Musesengwe and Cameron Tailford (Deceased)

Origins and ambitions of the Congruence Engine project

Tim Boon

History of communications and the Congruence Engine: early thoughts and possibilities

Jon Agar

The future: reflections on emerging machine-learning methods for digital heritage

Asa Calow

Connecting with industrial heritage collections using video production methods

Paul Craddock

Collaborative conversation as a method for exploring multiple perspectives on 'community' and forms of knowledge in the Congruence Engine

Simon Popple, Stefania Zardini Lacedelli, Arran J Rees, Stuart Prior and Maggie Smith

Vision

Making all UK heritage collections fully accessible together to anyone who might want to use them, and for whatever historical or curatorial purposes they might have.

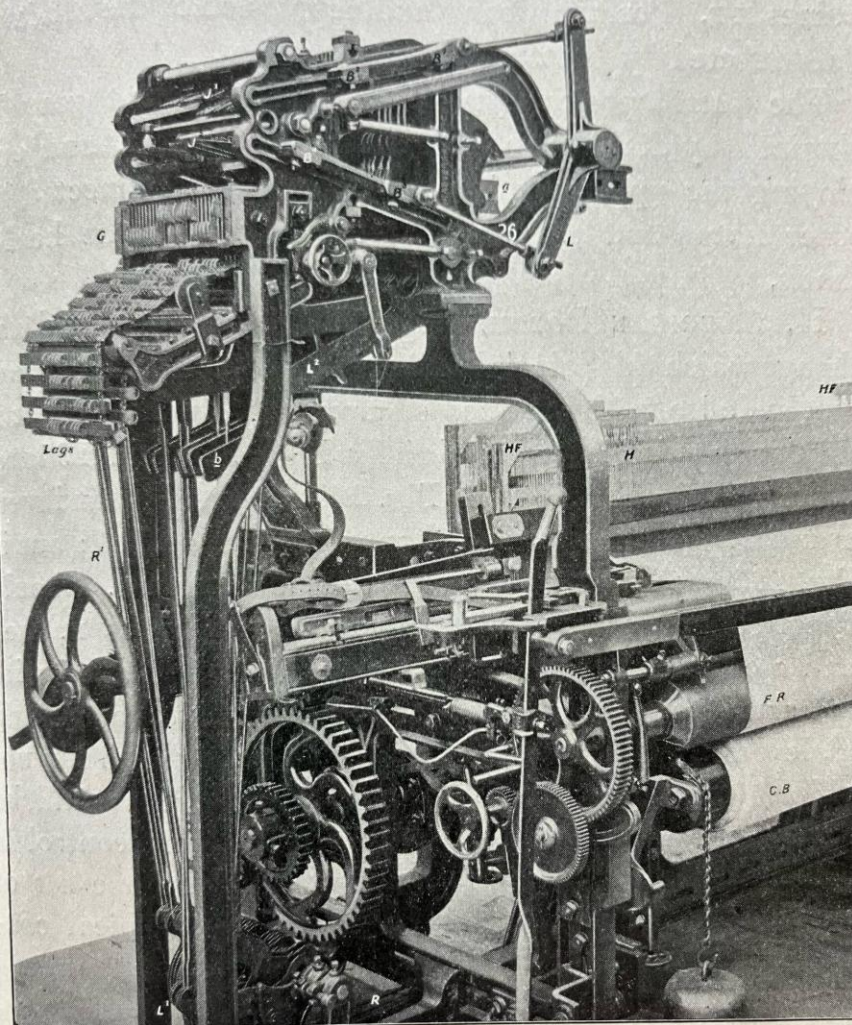
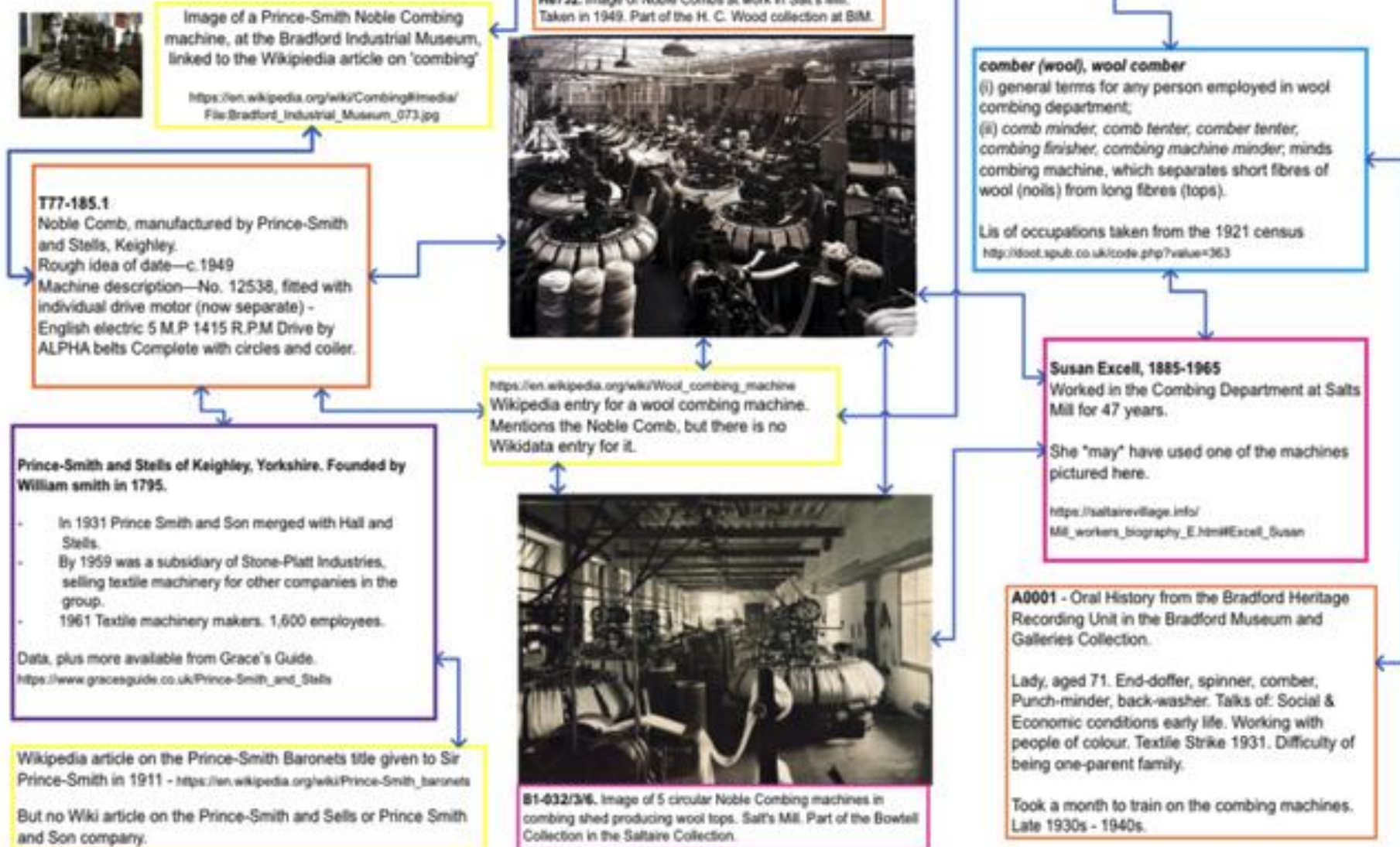


FIG. 294. Hattersley's Angle Lever Dobbie, mounted with Beaumont and Hollis's mechanical Heald-Shaft connections operating from underneath the Shafts.

Key:
 Yellow is Wikipedia / Wikidata entries
 Orange is the Bradford Museums and Galleries collection
 Blue is the list of occupations devised from the 1921 census
 Pink is the Saltire Collection
 Purple is information from Grace's Guide



FORMS 100

✓ <i>base 820</i> Inventory No. <i>1914-112</i> Cat. No. <i>1</i>	
Object: <i>24 Specimens of prepared ^{samples of} cottons mounted on two cards</i>	
(No. in old Divisional Register)	
Position. <i>Unit 6- 23D</i>	Acquired from (Presented.)
Date of Receipt. <i>16. 2. 14</i>	<i>W. S. Murphy, Esq.</i>
Regd. paper No. <i>14/320</i>	<i>"Kara"</i>
	<i>Lower Camden.</i>
	<i>Chislehurst,</i>
	<i>Kent</i>

Murphy
210232

BOARD OF EDUCATION

CATALOGUE
OF THE COLLECTIONS IN
THE SCIENCE MUSEUM
SOUTH KENSINGTON

DESCRIPTIVE AND HISTORICAL NOTES
AND ILLUSTRATIONS

TEXTILE MACHINERY



1921

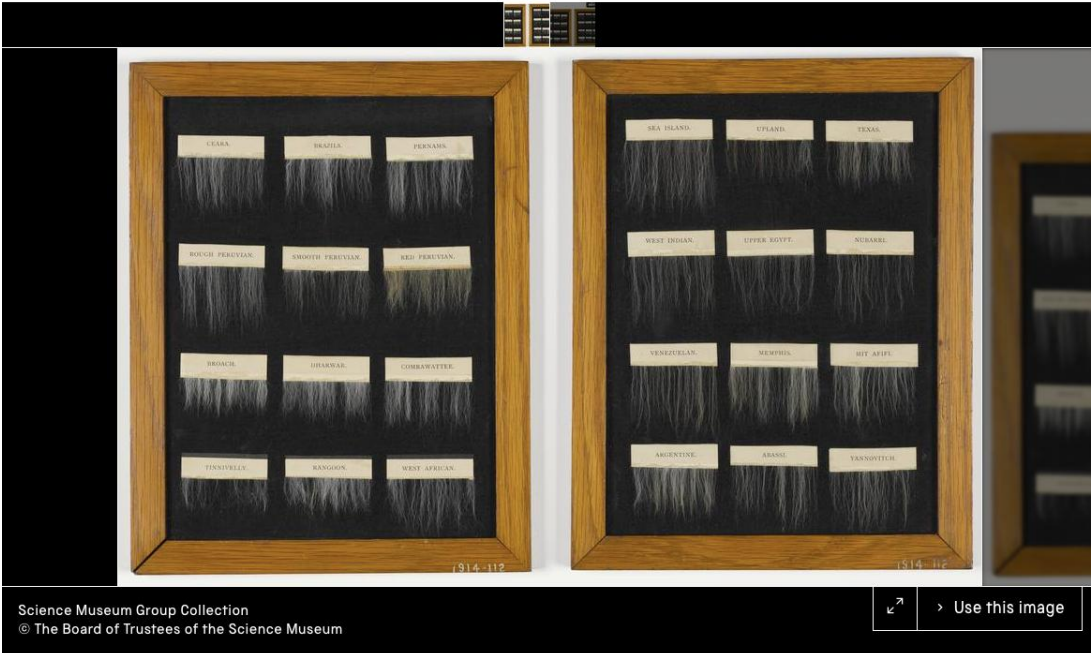
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PRICE ONE SHILLING NET.

Cotton Staples

MADE: 1900-1914 in unknown place



Twenty four specimens of prepared staples of cottons, mounted on card within two wooden and glass cases.

DETAILS

CATEGORY:	Textiles Machinery
OBJECT NUMBER:	1914-112
MATERIALS:	cardboard, complete, cotton (fibre), glass and wood (unidentified)
MEASUREMENTS:	individual: 270 mm x 230 mm x 20 mm.
TYPE:	sample
TAXONOMY:	
CREDIT:	Gift of Mr. W.S. Murphy

CITE THIS PAGE

Science Museum Group. Cotton Staples.

Rights

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[Using our data](#)

1. SPECIMENS OF COTTON. Presented by W. S. Murphy, Esq., 1914.

The cotton plant (natural order *Malvacea*, genus *Gossypium*) is widely distributed throughout the world between latitudes 40 degs. N. and 30 degs. S. It requires for its best development, as for its finest spinning, a moist and warm atmosphere. The fibre when matured becomes flattened, and has a helical twist amounting to as many turns as 180 to the inch. This is of great importance in the operations of spinning. The finer the fibre the more it is twisted, and the finer the yarn that can be spun from it.

The length of the fibre is called the staple, and in the case of the best cotton of all, that grown in South Carolina and known as Sea Island cotton, the staple sometimes reaches 2 in. The commercial value of a cotton is determined by its length, fineness, strength, pliability, smoothness, uniformity, colour, and cleanliness. Some varieties of cotton are best suited for spinning into twist or warp yarn—these have a hard strong fibre; weft yarns require a softer and more pliable fibre.

These specimens are representative of the different varieties of cotton grown throughout the world. Sea Island cotton has a staple 1.8 in., diam. 0.0006 in., will spin into yarn up to 400's counts (i.e., 400 hanks of yarn to the pound) and is suitable either for warp or weft. American cotton (Uplands, Texas, Memphis, etc.) is white, soft, pliable, fairly strong. Length 0.9 in. to 1.1 in., diam. 0.00076 in. The Uplands sub-variety is especially good for weft. West Indian cotton has a helical twist more perfectly developed than any other variety, but it is short in staple and rather harsh and dry, diam. 0.00077 in. It is only used for coarse yarns up to 40's. The supply from this source is rather small. Egyptian cotton has a staple 1.3 in., diam. 0.00071 in., will spin up to 150's counts and can be used either for warp or weft. Brazilian cotton (Pernams, Ceara, etc.) is rather harsh and dry but fairly strong. Staple 1.1 in. to 1.3 in., diam. 0.00077 in. It will spin up to 60's and is better suited for warp than for weft. Peruvian is of two principal kinds, the smooth is soft and flexible and easily spun; the rough is harsh and wiry and mixes well with wool. Staple 1.28 in., diam. 0.00077. It will mix up to 70's; the rough is suitable for warp and the smooth for weft. Indian cotton (Broach, Dharwar, Oomrawattee, Tinnivelly, etc.) is fairly strong but varies considerably in the different provinces, in some of which the heat is too great for a good development of the plant. The staple varies from 0.4 in. to 1 in., diam. 0.00083 in. Useful only for coarse yarns up to 36's and chiefly for warp. West African cotton is small in quantity and harsh, but of good colour. Staple 1 in., diam. 0.00083 in. It will spin warps up to 40's counts.

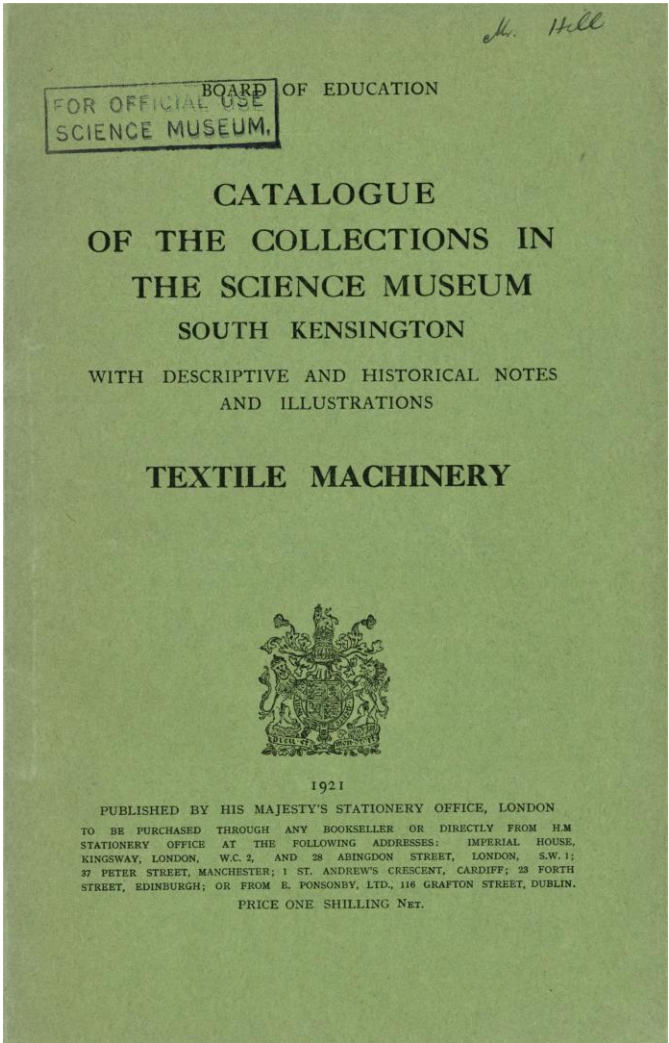
Inv. 1914-112.

Data: The Problem

Data: The Problem

- Thin
- Inconsistent
- Isolates collections items from their source contexts

Congruence Engine solutions



cap spinner (Q127786402)

a machine used to spin fibers into yarn with a cap mechanism. Note: description generated using ChatGPT 4o

edit

[In more languages](#)

Statements

subclass of	textile machine edit
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	machine edit
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has use	textile manufacturing edit
	▼ 0 references + add reference
	spinning edit
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used by	textile worker edit
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	+ add value

model item	64 spindle cap spinner edit
	applies to use with property instance of
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	+ add value

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: raw_image
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WOOLLEN AND WORSTED

THE THEORY AND TECHNOLOGY OF THE
MANUFACTURE OF WOOLLEN, WORSTED,
AND UNION YARNS AND FABRICS

BY

ROBERTS BEAUMONT, M.Sc., M.I.Mech.E.

For twenty-three years Professor of Textile Industries at the Leeds University. Textile Inspector for the City and Guilds of London Institute, and the Institute's Honorary Medalist for Examination Work; Society of Arts Medalist; Vice-President of the International Jury on Textile Machinery at the Paris Exhibition, 1900; Author of "Wool Manufacture," "Colour in Woven Design," "Finishing of Textile Fabrics," "Woven Fabrics at the World's Fair, Chicago"; and Editor, from its Inauguration to Session 1912-13, of the Leeds University Textile Journal



LONDON

G. BELL AND SONS, LTD.

1915



Citations

1 to 4 of 4



Book

Timon Screech (2020)

[The Shogun's Silver Telescope: God, Art, and Money in the English Quest for Japan, 1600-1625.](#)

Oxford University Press

Reviewed by 3 citations



Book

John Oldland (2019)

[The English woollen industry, c.1200-c.1560.](#) Routledge/Taylor & Francis Group

Reviewed by 1 citation



Article

Muldrew, Craig (2012)

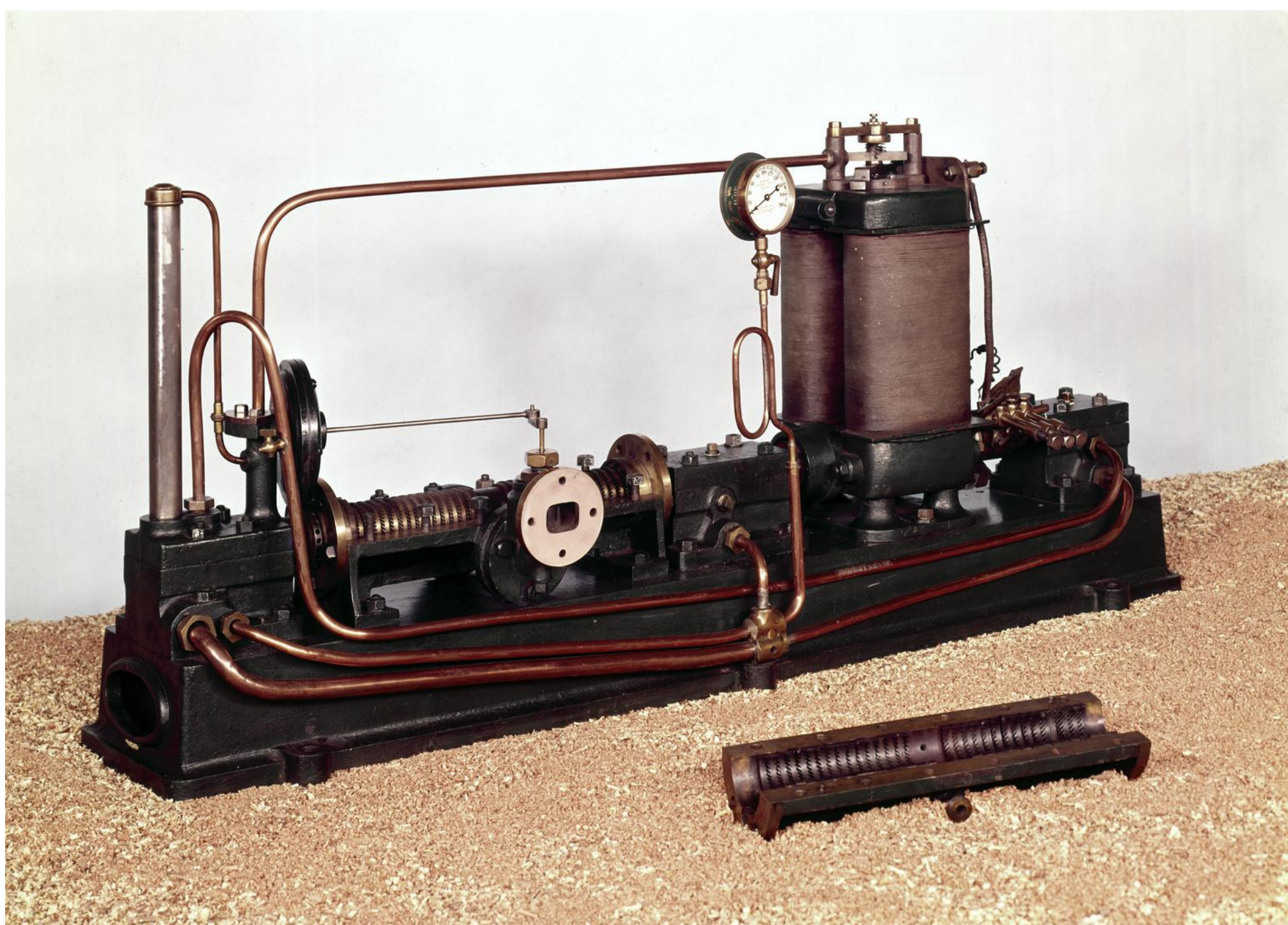
["Th'ancient Distaff" and "Whirling Spindle": Measuring the Contribution of Spinning to Household Earnings and the National Economy in England, 1550--1770.](#) *Economic History Review* (p. 498).

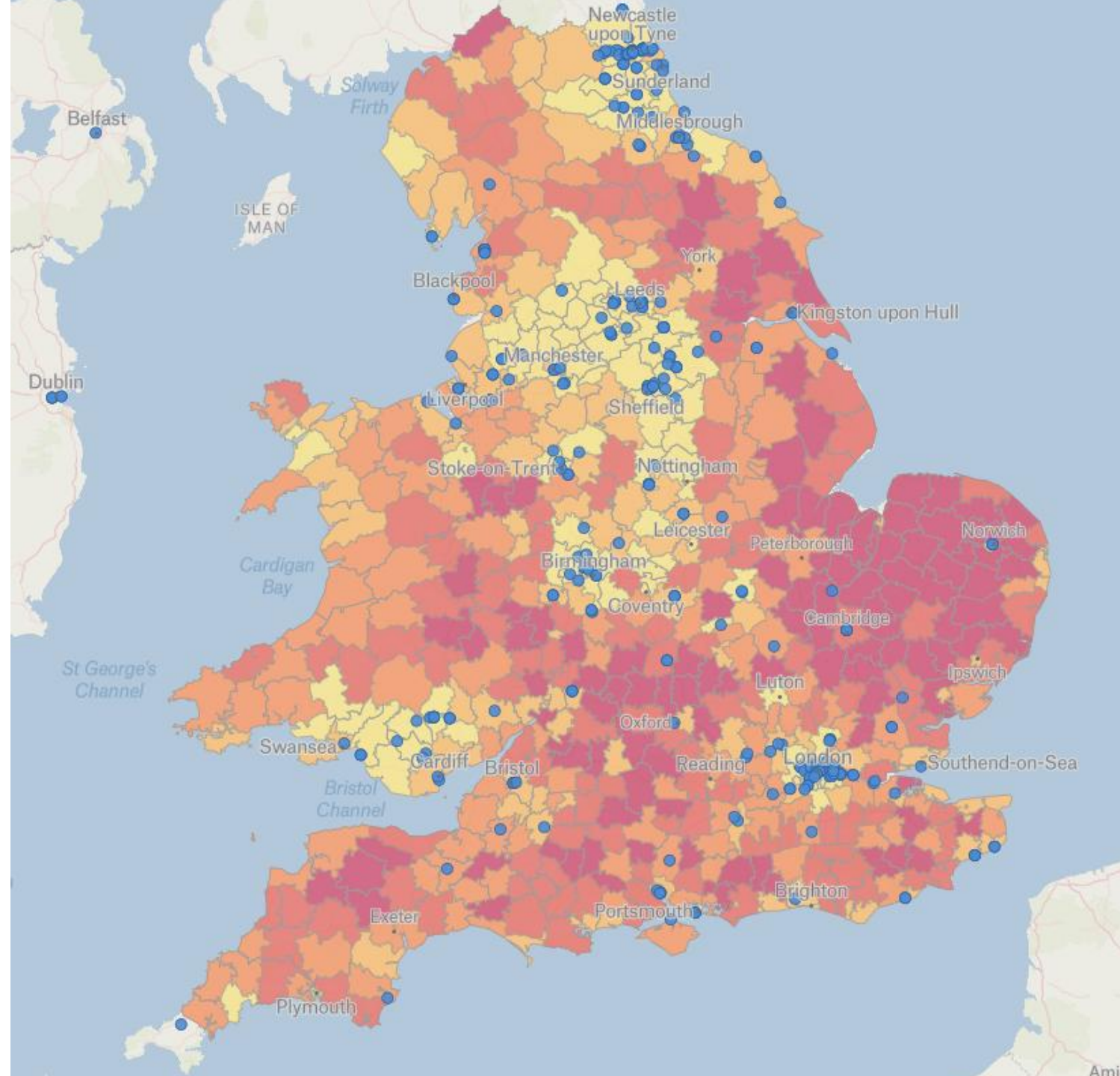


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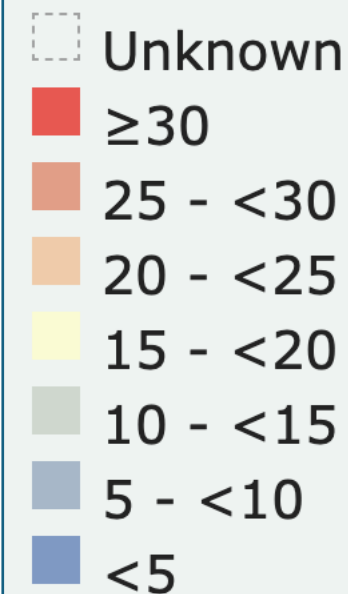
Christensen, Antje (2002)

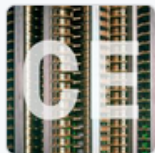
[The Incan Quipus.](#) *Synthese* (p. 159).





RG's class 5:
manual unskilled
RG's social class
5 (unskilled
workmen) as a
percentage of all
working-age
men





The Congruence Engine

The Congruence Engine is a TaNC-AHRC research project looking to connect industrial history collections.

7 followers

<https://www.sciencemuseumgrou...>

Overview

Repositories 43

Projects

Packages

People

Pinned

investigations Public

This is a static website for Congruence Engine investigations.

HTML

training Public

training material developed as part of the Congruence Engine project

2

Repositories

Find a repository...

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Race-and-Decolonisation Public

Race and Decolonisation

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Repository on a series of Experimentations with Optical Character Recognition

Jupyter Notebook 1 MIT 0 0 0 Updated last week

transforming-researcher-notes Public

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heritage-weaver Public

Code for the Heritage Weaver project

0 MIT 0 0 0 Updated last week

People

This organization has no public members.
You must be a member to see who's a part of this organization.

Top languages

Python Jupyter Notebook
TypeScript HTML

QUESTIONS?

t.boon@ucl.ac.uk

allows us to search and catalogue oral histories.



LARGE LANGUAGE MODELS: Machine learning enables us to train a computer to analyse text. This is called a 'large language model'.

enables us to see where images were taken and how a place has changed over time.



CROWDSOURCING: Using the online platform Zooniverse, amateur historians can contribute to the project.

location data to photos enables us to see where images were taken and how a place has changed over time.



CHARACTER RECOGNITION: Optical character recognition technology can be used to identify text in images.

CHARACTER RECOGNITION: Optical character recognition technology can be used to identify text in images.

THE CONNECTION ENGINE

Combining **people-power** and advanced digital **technology** to reveal Bradford histories

Machine Loom Telegraph block Bottle

Connecting objects

Selecting a keyword shows the objects associated with it. This is possible because of the metadata attached to each record.

Metadata is a keyword attached to a data record that allows historians to connect objects from different museum collections. Our researchers have been adding keywords to objects to create new links between similar objects across multiple museums.

- Antique
- Magic lantern
- Ultramarine fabric dye

Reset

1/1

CARTWRIGHT HALL BRADFORD MUSEUM