CITY OF LONDON ARCHAEOLOGICAL TRUST ROSEMARY GREEN GRANT: Impact of Industrialisation on London Health

Report December 2017

Jelena Bekvalac

Work for the project has continued to progress well and with the radiography of targeted sites complete. Gaynor has continued to carry out research of the Metropolitan and Non-Metropolitan sites, radiographic analysis of the skeletal elements from the extensive number of radiographs generated from all of the sites, osteological data collection from the sites for addition to the Access database to enable analysis of the data and collated data for research. David Allan, the retired radiologist has very kindly continued to assist with the radiographic analysis of the multiple radiography images.

Radiographic Progress

Overview

Radiography of the targeted sites is complete. Endeavours were made to try and increase the total numbers for the Non Metropolitan Pre Industrial and Industrial sites. Emails were sent to units and universities with skeletal collections to enquire again if there were any other collections that could be included which had become available since the start of the project.

We were fortunate to be able to add to the project 50 aged and sexed individuals with the targeted elements for the project from the Hereford (Pre Industrial, Non Metropolitan) collection curated at Bradford University. Radiography had to take place out of tem time for access to the material and was undertaken with Jelena and Wayne Hoban from Reveal Imaging Ltd in August 2017. The inclusion of the individuals is a benefit to the project for another geographical location, and aids in making the overall total higher for Pre Industrial Non Metropolitan.

It had been hoped that the overall total of individuals for the Industrial Non Metropolitan sites could also have been increased but unfortunately it was not possible to find another suitable site. One site which looked hopeful from the initial excavations of an Industrial Non Metropolitan site revealed a small number of individuals in the first phase and looked as though the number would increase to make it cost effective to radiograph but unfortunately the number remained too small, we were very grateful to our colleagues in the unit who had kindly said that we could have had access. Enquires were made to units and universities again for any other Industrial Non Metropolitan sites which may not previously have been available but there were no further sites that could be added to those already radiographed.

Documentary Research: Archaeological, cartographic & environmental research

Research for the remaining archaeological sites Swinton, Mare Street and New Covent Garden was carried out by Gaynor, adding the information from them to the collated data for each site in BOX. A total of 5 days were remaining from the last report in which the data was collated. There was also the addition of a site, Hereford (medieval) collection curated at Bradford University, producing more data to be included from documentary research of the site. Enabling as well the numbers in the Pre Industrial Non Metropolitan sites to be increased aiding in the overall total for analysis.

Presentations in which the project has been included

Close to the Bone – Forensic Outreach event – July 2017 and November 2017

Oxford University - Bioarchaeology seminar, archaeology department, June 2017

Human Remains Subject Specialist Network Group (HRSSN) – workshops at MShed Bristol, July 2017 and Manchester University, September 2017

BABAO (British Association for Biological Anthropology and Osteoarchaeology) Annual Conference, John Moores University, Liverpool - Presented poster on Impact project – ***Radiographic revelations: Is that a blade in your back sir?***

Symposium in Leeds Museum, October 2017, as part of the touring Wellcome skeletons exhibition Skeletons: Our Buried Bones, at Leeds Museum

Talk which focused just on the Impact project for the Richmond Archaeological Society, October 2017

UCL Institute of Archaeology Honorary Research Associate

Tim Williams very kindly put Jelena forward to be an Honorary Research Associate at the UCL Institute of Archaeology. Following the process for application Jelena was fortunate to be successful in being made an Honorary Research Associate in August 2017. It is a privilege to have such a role and it will be invaluable for aiding in research for the project and dissemination about the Impact project.

Social media

Facebook

The Impact project has a Facebook page where blog posts have been made about the project by Gaynor and Jelena, as well as a contribution piece from one of the volunteers who assisted with the radiography of the skeletal elements of the London material. There is also a Facebook live filming sequence of the preparation and radiography (by Wayne Hoban of Reveal Imaging Ltd) of skeletal material from the Pre Industrial Non Metropolitan Hereford collection at Bradford University; and posts with associated areas of osteological interest. There have so far been 374 views of the blogs and posts.

Twitter

Gaynor was able to create a Twitter account for the Impact project, @Manufactured Bodies. With tweets about the work of the project and associated skeletal material links.

CT Scanning

Over a period of two sessions one complete individual and a selected number of elements from individuals within the London Metropolitan sites were able to be CT scanned using a 16 slice CT machine. The elements selected were those which had either shown areas of interest pathologically or an ambiguity in identification. The fine detail afforded from the images produced by the CT scanner with the assistance of another radiologist will assist in a better clarification of the pathological processes. The rendered and remodelled DICOM images from the CT scans will also provide another means of visualising the elements and be a useful research tool.

Complete individual CT scanned

3D Modelling

A selection was made of bones for 3D modelling and a total of 18 models were possible to create from individuals from Metropolitan and Non Metropolitan sites. Gaynor was able to create the models learning how to use the application Agisoft Pro which enables with a series of photographs for the construction with the programme of 3D model images of the bones. The application of photogrammetry is one that is now more frequently being applied in archaeology and Gaynor was deftly able to learn the use of the programme and to take the photographs for applying to the various stages of the application and virtual modelling to create excellent quality 3D models of the bones.

For viewing the 3D models of the selected bones from the Impact Project they were added to the platform Sketchfab, which is used by a number of other cultural heritage institutes. The platform is very good for sharing the images and being able to view and navigate the models, as well as adding contextual information for the sites and to annotate the actual bones highlighting the areas of interest and providing more details.

The models of the bones from the Impact Project have so far had 640 views and have 7 followers.

https://sketchfab.com/jbekvalac

The 3D models are of a quality that would enable the features to be used for analysis and research as well as being valuable teaching aids which will be of benefit to the Centre for Human Bioarchaeology for teaching and outreach in the future.

WSM43246 8134 Cranium Pipe Smoking Facet

Proposed article publication

An enquiry was made to The London Archaeologist for submission of an article providing an overview of the Impact Project. The response was fortunately positive and information provided for the process of submission. Work will begin on writing the article for inclusion in a future edition.

Book Publication

An enquiry has been made for being able to use an image of one of the chain sculptures created by the artist Seo Young Deok as a potential book cover; the work of the artist had a strong visual resonance with the themes of the Impact Project.

JPEG radiography Images

Reveal Imaging Ltd has continued to work with the project for completing the conversion of DICOM images to JPEG images and the process is in its final stages being nearly complete with a small number of outstanding image queries to be addressed.

Completed radiographed sites

All of the targeted sites have been completed and with the addition of a selected sample of 50 individuals from the Hereford skeletal collection (Pre Industrial Non Metropolitan site) curated at Bradford University.

Site	Location	Time Period	Individuals radiographed
North Eastern Cemetery, Bethnal Green (PGV10)	London	Industrial	200
Billingsgate (BIG82)	London	Industrial	29
Bow Baptist (PAY05 & BBP07)	London	Industrial	127
St George's, Brentford (HHS14)	London	Industrial	114
Bridewell Workshouse - AOC (NBR98)	London	Industrial	8
Broadgate (LSS85)	London	Industrial	61
Chelsea Old Church (OCU00)	London	Industrial	36
Lower Churchyard St Bride's (FAO90)	London	Industrial	136
Mare Street (MRH14)	London	Industrial	146
New Covent Garden (NNE16)	London	Industrial	23
St Bride's Crypt (SB79)	London	Industrial	174
St Mary Graces (MIN86)	London	Pre-Industrial	12
St Mary Spital (SRP98)	London	Pre-Industrial	399
Coach Lane, North Shields (COL10)	Non-Metropolitan	Industrial	88
St Micheal and St Lawrence, Fewston (SLF09)	Non-Metropolitan	Industrial	24
Hereford (Hea)	Non-Metropolitan	Pre-Industrial	50
Holy Trinity, Stratford (P4442)	Non-Metropolitan	Pre-Industrial	48
Holy Trinity, Stratford (P4442)	Non-Metropolitan	Industrial	33
St Peter's, Barton on Humber, Humberside (BH81)	Non-Metropolitan	Pre-Industrial	189
St Peter's, Barton on Humber, Humberside (BH81)	Non-Metropolitan	Industrial	134
Swinton, Manchester, OA Archaeology (SWC12)	Non-Metropolitan	Industrial	50
Upton on Severn,Worcestershire (WSM43246)	Non-Metropolitan	Industrial	10
Wharram Percy , North Yorkshire	Non-Metropolitan	Pre-Industrial	128
Wharram Percy , North Yorkshire	Non-Metropolitan	Industrial	29
Total			**2248**

Radiographic and Macroscopic Analysis

Gaynor and David have continued with the radiographic analysis of the sites, utilising the Access database created for the project by Gaynor, enabling the information of radiographic analysis recorded by Gaynor of elements with pathological interest to be searched on the database by David for cross checking and making any additional comments.

The radiographic analysis by Gaynor is completed for all of the sites; including the addition of the Hereford collection. The radiographic analysis by David is nearly complete with a few outstanding images from Barton to cross check. Gaynor was able to use the days for the analysis which had originally been assigned to Mark Farmer.

There continued to be interesting pathological observations from the radiographic analysis including examples of 'Rugger Jersey' effect, a possible link with hyperparathyroidism observed in a number of individuals from Pre Industrial Metropolitan, Spitalfields (SRP98), Industrial Metropolitan Bethnal Green (PGV10) and Pre Industrial Non Metropolitan Barton (BH81) and Pre Industrial Non Metropolitan Hereford (HEa). The identification of what appeared to be a possible embedded blade tip in the lumbar vertebra of an individual from Broadgate (LSS85) formed the basis of the poster presentation for BABAO. Discussing what may have been the cause for the embedded metal, was it linked to a possible stab injury from a bladed weapon or as a consequence of the presence of associated coffin furniture of pins and studs.

The collation of the remaining macroscopic data from the sites focussing on trauma, joint disease, DISH, rib lesions and pipe-smoking facets continues to be undertaken by Gaynor and will be completed by the end of December.