

## **Health, Disease, and Gender in Late Medieval England: The Osteological Evidence**

**Sandy Bardsley, Associate Professor of History**

**(with Paige Malewski, BioChemistry major, 2016)**

**Start date: May 27, 2014**

**Duration: 10 weeks**

Over the summer, Paige and I plan to investigate the archaeological evidence for disease and health in late medieval England and, in particular, how disease varied by gender. This topic is a complicated one and will require Paige to (1) develop a working knowledge of the symptoms of health and disease and the way these manifest in bones; (2) become familiar with the debates among archaeologists about the significance of various health markers; (3) help construct a database about a variety of health markers from archaeological reports; and (4) use this database to construct a poster and/or write a paper for an academic conference. Depending on our findings, we may also publish the database online. I will use the database, along with our summaries of the scholarship on the significance of health markers, as the basis for an article to be submitted to an academic journal.

Paige will begin her SOAR project by familiarizing herself with the general contours of late medieval English history, the history of disease and health in late medieval England, and general approaches to osteoarchaeology.<sup>1</sup> At the same time, she and I will work to identify archaeological reports (I already have a preliminary list) and order them on inter-library loan as we will need these in weeks 5 to 7.

Our next tasks will involve review and summary of the existing scholarship on the significance of what archaeologists call “non-specific stress markers.” Paleopathologists have long been aware that malnutrition and illnesses sometimes leave traces in the bones and teeth, particularly those of children. In theory, then, these non specific stress markers provide an excellent way to compare the health of medieval men and women. Unfortunately, it’s not so easy! Some scholars regard non-specific stress markers as highly significant; others are quite dismissive. At the heart of many concerns about stress markers is a problem that archaeologists call the “osteological paradox”: for a mark to be left on bones or teeth, an individual usually had to recover from an illness or period of malnutrition. Those who were most affected and died quickly from their condition typically show no marks, since the bones and teeth form very slowly. Ironically then, stress markers form in the bones and teeth of the healthier members of a population who are able to overcome

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<sup>1</sup> For example, relevant chapters in Roberts et al., *A History of England*, Carole Rawcliffe, “Health and Disease” in *A Social History of England 900-1200*; Charlotte Roberts and Margaret Cox, *Health and Disease in Britain: From Prehistory to the Present Day* (esp. medieval chapters), Simon Mays, *The Archaeology of Human Bones*. A more extensive bibliography is available on request, though I imagine that some of the reading recommendations may be generated through discussion and identification of areas where Paige may have gaps.

diseases and ill health. Some studies have shown a correlation between shorter life expectancies and the presence of non-specific stress markers such as Harris lines (bands of increased bone density that may denote periods in which childhood growth was retarded by severe illness or lack of nutrients), cribra orbitalia (small pittings of bone within the eye socket and skull which may indicate iron-deficiency anemia, gastro-intestinal parasites, or other dietary inadequacies), and enamel hypoplasia (bands on the teeth where enamel formation is poor). Other studies, however, have shown the opposite. Since each stress marker theoretically indicates periods of ill health, one would expect that a skeleton showing signs of one (e.g., cribra orbitalia) would necessarily show signs of the others (e.g., enamel hypoplasia and Harris lines). Yet several studies have found that this is not the case and that individuals can manifest one marker without the others. In short, work on non-specific stress markers and their interpretation is still very much in progress, and this means that data about gender is even more ambiguous. Paige and I will use the Wiley Interscience database to identify, read, and summarize scholarship on the following non-specific stress markers: (1) Harris lines, (2) cribra orbitalia and porotic hyperostosis, (3) dental health, including enamel hypoplasia, abscesses, caries, calculus, periodontitis, and ante-mortem tooth loss, and (4) bowing of leg bones characteristic of Osteomalacia and Rickets. In addition, she will search for the most recent work on stature (height is arguably a useful measure of health) and on carbon and nitrogen isotopes found in bone collagen (a new and interesting field). Paige and I will talk about the ways that the debates on the significance of each non-specific stress marker might best be presented – e.g., as sections on a poster or as sections to be covered in a paper or papers. Certainly I expect that this work will result in a concrete, written summary of the significance of each marker from which each of us can draw in weeks 8 to 10.

In Weeks 5 to 7, Paige will turn her attention to compiling an Excel database using the archaeological reports ordered earlier. The database will summarize the prevalence of disease from all available archaeological data for parish cemeteries. Something similar exists for monastic cemeteries, although it contains far less information about disease than we would like to include.<sup>2</sup> Moreover, monastic cemeteries, while useful in many ways, tell little about the health of the population at large, since the monastic population was necessarily drawn from an elite group. Nonetheless, this monastic cemetery database, searchable online, will give us a model and point of departure, and depending on the quality of our own database we may publish ours online in a similar format. We will need to work together quite closely in compiling the database, as many reports are somewhat idiosyncratic (the lack of uniformity in archaeological reports is the topic of much hand-wringing in some scholarly circles!). Many reports are missing data on certain non-specific stress markers; others include data but they are expressed in unusual ways. Paige will take primary responsibility for inputting this data, although we will meet

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<sup>2</sup> The Monastic Cemetery database project, known as Requiem, was compiled by the British scholars Roberta Gilchrist and Barney Sloane. In terms of diseases, it includes only diffuse idiopathic skeletal hyperostosis (DISH), syphilis, leprosy, and tuberculosis. The database is searchable at [http://archaeologydataservice.ac.uk/archives/view/cemeteries\\_ahrb\\_2005/](http://archaeologydataservice.ac.uk/archives/view/cemeteries_ahrb_2005/)

several times a week at this stage, as well as staying in touch via email, to discuss any data that is hard to classify.

Finally, we will use the database as the basis for (in Paige's case) a paper and/or poster at an undergraduate research conference and (in my case) an article about health and gender in late medieval England. Depending on how the research progresses, we may write these separately or as co-authors. At a minimum, however, Paige should be able to present a poster or a paper and I should be able to use the database she helps compile as the basis for an article (in which Paige's role would certainly be acknowledged) in an academic journal. If we have decided that our database is worthy of web publication, we will also use these final weeks to "tidy" it and find an appropriate forum where it might be hosted.

### **Timetable and Responsibilities**

(PM: Paige Malewski; SB: Sandy Bardsley)

Week 1:

- Identify archaeological reports to be used and order these on interlibrary loan. (SB)
- Read background material on late medieval England, disease and health in the middle ages, and osteoarchaeology. (PM)
- Start to identify and order articles on non-specific stress markers. (PM & SB)

Weeks 2-4:

- Read and summarize articles on non-specific stress markers. (PM)

Weeks 5-7:

- Compile an Excel database, using archaeological reports, of the prevalence of disease from all available archaeological data for parish cemeteries. (PM in consultation with SB)

Weeks 8-10:

- Prepare a paper or poster suitable for an academic conference (venue TBA) that summarizes the findings and explains them clearly. (PM)
- Prepare an article that summarizes the findings and relates them to the broader historiographical debates about gender, health, and status in the middle ages (SB)
- Possibly publish our database online (PM & SB)

# **Health, Disease, and Gender in Late Medieval England: The Osteological Evidence**

**Paige Malewski, BioChemistry major, 2016**

**(with Dr. Sandy Bardsley – Associate Professor of History)**

## **On campus Housing is requested**

One of the many reasons I would greatly like to get involved with a project such as this is because it involves a topic that inspires a lot of passion in me. I love learning, not only about other cultures and people but also about disease and how it affected life throughout history. A study pertaining to these topics is Paleopathology. This topic holds immense interest for me and is something I never tire of reading about or discovering news about it. Even though I am a BioChemistry major and I love science I also have a deep appreciation for history. Naturally these two categories lead me to Paleopathology.

I want to do this project not only to pursue something I care a lot about but to gain new insight and knowledge about how time, place, culture, circumstances and gender could affect the diseases someone could get. I would like to go to medical school while pursuing a PhD in paleopathology and I believe this project would help me step foot onto a path that I click with. When I think about doing something in this field while helping others on a medical basis I feel a sense of rightness that fills me up, like this is what I'm meant to do for the rest of my life and I'm prepared to work hard to accomplish this task. Neither field is easy but the thought of being able to help someone else through my knowledge or research is all the motivation I need.

This project proposes that Dr. Bardsley and myself look into the archaeological evidence for disease and health in late Medieval England particularly pertaining to how disease varied by gender. This topic will make me more aware of not only how disease will affect bones, but also how the symptoms of health would cause such manifestations in the bones over time. Also I plan with the help of Dr. Bardsley to set up a database that will compile information from different archeological research on various health markers from parish cemeteries. These health markers include: Harris lines, cribra orbitalia and porotic hyperostosis, dental health, including enamel hypoplasia, abscesses, caries, calculus, periodontitis, and ante-mortem tooth loss, and bowing of leg bones characteristic of Osteomalacia and Rickets. Also I will search for work on height (which helped a lot to show a certain standard of health) and on carbon and nitrogen isotopes found in bone collagen.

With this database I should be able to find commonalities between instances of each health marker and be able to write a substantial paper or papers about it. It is also my intent to present my research at conferences and if the database is good enough to publish it and let it be open for public access. Also I am hoping to follow up my research with a scientific honors project based off what I find. I would like to do the honors project on a specific disease and how it has evolved or how it shows prevalence and why in certain genders. By doing this project it will help me find a

scientific avenue in which to come up with a series of experiments to exemplify a certain disease and its prevalence.