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# SEARCHING FOR THE MISSING SOLDIER

## Identifying casualties from the First World War

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In recent years there has been an increase in the numbers of archaeologists and physical anthropologists involved in searching, locating and assisting in the identification of war casualties. These scientists have played an invaluable role within a larger team of professionals, working together to provide a dignified burial to those who fell for their country and remembering them. This paper reviews some of the work undertaken in Europe with regard to World War I casualties and how the war missing are found and ultimately identified when possible, bringing also some closure to their living relatives.

Keywords: World War I, human remains, forensic anthropology, archaeology, DNA.

## INTRODUCTION

In recent years there has been a tremendous effort to identify the First (and Second) World War dead. In this process of identification, the involvement of (forensic or conflict) archaeologists and (forensic) anthropologists has also received increasing recognition. Most of the effort has been led by the Commonwealth War Graves Commission (CWGC) and the different Commonwealth countries represented (see CWGC, 2018). The latter has focused primarily on British, Australian, New Zealand and Canadian forces, but it also includes Indian and South African. Other countries such as France and Germany (less so for the First World War) have also increased their efforts to name the unknown soldiers (see Hanson, 2006), whose remains have been found (see also Verdegem et al., 2018). A number of associations (historians, amateurs, and professional archaeologists) around Europe are also working to locate the First and Second World War dead.

The year 2018 marked the 100th anniversary of the end of the First World War which took millions of lives and this paper is timely in reviewing currently how the missing are found and how the unknown are identified. Although, primarily with a Commonwealth focus, this article highlights the different efforts to search for the fallen soldiers of the Great War whose remains lay buried in unmarked graves, in battlefields or still in the trenches. It provides a summary of the identification procedures and refers to a number of published case studies. Firstly, a brief summary of archaeology of the Great War is provided, followed by a review of a number of different organisations working to locate the remains of the fallen, a number of case studies which illustrate 'life in the trenches', and finally a summary on DNA analysis used to identify the dead. Some of the constraints in this paper regarding specific information on casualties are due to different organisational policies concerning disclosure on the identification of war dead, and take into account a number of ethical considerations.

**«Archaeology and anthropology have played an important role in identifying World War I soldiers»**

## ARCHAEOLOGY OF THE FIRST WORLD WAR

Although this work focuses on the human (skeletal) remains of the fallen soldiers, it is worth highlighting the work of colleagues in the field of conflict archaeology, a topic or subfield which has gained importance in recent decades (see a review in Stichebault et al., 2018) with journals such as *Journal of Conflict Archaeology* covering a number of

periods from prehistory to the present day. Regarding World War I (WWI) much work has focused on excavating and studying structures, features, other contexts, human remains, and artefacts (e.g., see Desfossés et al., 2009; Robertshaw and Kenyon, 2008; Stichelbaut, 2018). These excavations have been, for the most part, rescue excavations resulting from accidental discoveries (e.g., after ploughing a field) or preventive measures (e.g., during building development, Figure 1). However, there have also been proactive searches for WWI remains (see Desfossés et al., 2009).

## THE FALLEN OF THE GREAT WAR

A number of groups throughout Europe have actively taken an interest in dignifying the remains of the missing and fallen, to provide a proper burial and, where possible, to identify the remains, providing thus some closure to relatives. In the early years of the war, burying the fallen was undertaken by the soldiers (there were also specific units in charge), either right where they died or in nearby cemeteries (Wilson, 2012). As the war progressed further and the death toll increased, the Red Cross Burial Unit established by Sir Fabian Ware, later becoming the Imperial War Graves Commission (IWGC) in 1917, deployed soldiers to recover the bodies of the fallen, bury the dead on the newly established war cemeteries from 1918 onwards, mark their graves, and to answer enquiries from relatives (Hanson, 2006; Wilson, 2012). Many cemeteries in the case of the Commonwealth countries as well as other nations such as France and Germany were created throughout Europe (Figure 2), the last such cemetery by the CWGC was that of Pheasant Woods in 2010 to bury the soldiers at Fromelles (see below). Many of these graves have the inscription «Known unto God» where the human remains of a soldier have not been identified. Many of the unidentified human remains may relate to the names of the missing which appear in monuments such as the Menin Gate in Ypres, Belgium. Today, in the case of the UK, the Joint Casualty and Compassionate Centre of the Ministry of Defence assists in assessing the potential for identification of WWI and WWII human remains presumed to be British found throughout Europe and elsewhere.

DigHill 80

Figure 1. Many excavations to rescue structures, human remains, and objects related to World War I have resulted from accidental discoveries or preventive measures before building development on a site. This is the case, for example, with the Hill 80 project. In 2018, an international group of archaeologists and historians initiated an excavation at *Höhe 80* ("hill 80") near the town of Wijtschate (Belgium), which was used as a military position by the German army. This project is being completed thanks to a still active crowdfunding campaign. In the picture, aerial photograph of the largest grave found in the area, located within the area demarcated by the tent, from which eighteen German soldiers who fought in World War I were recovered.

**«The main challenge with WWI identifications is the familial distance between the soldier who died in World War I and the relatives who are alive today»**

The case studies included in this paper have been selected as they demonstrate how archaeology and anthropology have played an important role in identifying WWI soldiers. The recovery of those remains and the anthropological study in the mortuary has also enabled us to understand a little more who those people were, and what «life was like in the trenches». Overall, without providing too much detail for the purposes of this paper, archaeology can be used to locate, search and recover the human remains and associated artefacts and provide an interpretation of the event surrounding death and deposition. In these contexts, physical or forensic anthropology focuses on tasks such as identifying if a bone is human or not, establishing the minimum number of individuals represented, creating a biological profile (age-at-death, sex, ancestry, stature, unique identifying features), attributing bones to the same individual in fragmented and commingled assemblages, and sampling (and minimising the sampling) for DNA analysis. In addition, the anthropologist may assess peri-mortem (around the time of death) trauma which may sometimes allow corroboration with historical documentation regarding the manner and cause of death of a soldier in a particular battle scenario. Moreover, the analysis of (ante-mortem) healed trauma such as fractures and certain diseases such as infections, degenerative joint disease, metabolic conditions, and dental disease may assist and complement historical information regarding previous lifestyle as well as living conditions during the war. The cases mentioned below are presented here with dignity and respect, and no images of human remains are included. These examples encompass deposition sites where the remains of one individual were found as well as mass graves. These cases should cover the process from search to identification, although this can vary on a case by case basis.

## SEARCH, EXHUMATION, IDENTIFICATION, AND RECONSTRUCTING «LIFE IN THE TRENCHES»

Several archaeological excavations and anthropological analyses of WWI casualties have been undertaken with dignity and respect and have been justified. At times, the war dead have been part of excavations to avoid destruction through development for roads or buildings. Other cases relate to historians or relatives searching for their missing relative. A case which in a way marks a timeline in the history of WWI mass grave investigations and sets some standards is that of the unmarked mass graves near Fromelles, France. This case has been unique with regard to infrastructure, specialists involved, identifications achieved, and financial support amongst other aspects (see Wessling, 2018). Through the work of historians, the government of Australia within the CWGC funded the work to recover, identify where possible, and rebury almost 250 Australian soldiers who died during the Battle of Fromelles on 19-20 July 1916 and were buried in mass graves by German soldiers (Loe et al., 2014). In 2009, the excavations were directed by Oxford Archaeology, backed by the British and Australian Government under the umbrella of the Commonwealth War Graves Commission. The unique set up included a temporary mortuary next to the excavation site, an x-ray unit, a storage unit for DNA samples, an artefact processing laboratory and a memorial centre for visitors (Loe et al., 2014, Wessling, 2018).

Once the remains have been excavated, it is usually appropriate to undertake anthropological analyses. The anthropological analyses comprise calculating the minimum number of individuals, the estimation of sex and age-at-death where possible, as well as the estimation of ancestry, stature and any other unique identifying features. Methods vary in the literature but they would correspond to general accepted international methods such as those based on the pelvis and skull for sex estimation; the assessment of skeletal maturity, dental development, morphological changes of the pubic symphysis, rib end morphology, and auricular surface of the innominate bone (to a lesser extent) for age-at-death estimation; the measuring of long bones for the calculation of stature and morphological assessment of the skull for the assessment of ancestry. More specifically, the methods employed can be found in the published literature regarding First World War casualties (e.g., DeWilde et al., 2018; Dussault et al., 2016; Loe et al., 2014).

In the case of Fromelles (Loe et al., 2014), anthropological analysis of the 250 recovered complete skeletons and a number of disassociated body parts indicated male individuals, the majority in the 18–25 year age range when they died, although the ages ranged from adolescence (13–17 years) to young and mature adults (26–45 years); and an


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average stature of 172 cm (Barker et al., 2014). Whilst the dental disease prevalence was relatively high (see Barker et al., 2014), there was also evidence of dental care, with 54 % of individuals having some type of dental work including 46 individuals with dentures. Amongst the pathological conditions, degenerative joint disease was the most prevalent (Barker et al., 2014). Ante-mortem trauma was also prevalent, with 30 % of the individuals affected, particularly involving the ribs and vertebrae, but also the skull and the limb bones (Barker et al., 2014). A total of 231 individuals (92.4 %) presented evidence of peri-mortem trauma (Barker et al., 2014). Interpretations can be made on these results (see Barker et al., 2014; Loe et al., 2014) and within a wider biocultural approach to understand the factors that may have caused those diseases or injuries. Further information obtained, such as developmental enamel defects and stature, may also reveal something about the soldiers' childhood and living conditions at the turn of the twentieth century. Whilst this case was an pro-active search with great infrastructure and well-funded, others may rely on Heritage agencies or even crowdfunding in order to maximise the analysis.

Understanding the age, stature, disease, and trauma of soldiers from a number of nationalities, may assist in providing a more global picture but also different recruitment requirements, different diet, etc. in different armies. One case is the excavation by the Flanders Heritage Agency of a mass grave with 22 German WWI soldiers, analysed on their behalf by the Cranfield Recovery and Identification of Conflict Casualties (CRICC) Team, Cranfield Forensic Institute, Cranfield University (see Dewilde et al., 2018). No DNA analysis was undertaken but a number of casualties were named through their identification discs and all were reburied with military honours in a public ceremony. The biological profiles obtained for these skeletal remains indicated that they were all male between the ages of 15–45 years, with six individuals more likely to age between 15 and 20 years. Dental disease documented on the remains would indicate poor oral hygiene. On the vertebrae, Schmorl's nodes were the most common pathological condition affecting at least 20 individuals; in military groups is thought to result from prolonged heavy strain on the back (see Burke, 2012). During the analysis of the human remains, evidence for peri-mortem trauma was observed in the skeleton of at least ten soldiers with shrapnel embedded into some bones, affecting the limbs and ribs and likely a result of blast (see Dewilde et al., 2018).

**«Although DNA is a useful tool for identification, it is not a decisive element in historical cases»**

One individual case, as opposed to mass graves, shows how archaeology and anthropology have contributed to the discovery, identification, and subsequent proper burial of a WWI casualty. This is the case of Private Alan James Mather who fell in June 1917 in the Battle of Messines and his body was never recovered (Dussault et al., 2016). His name was inscribed on the Menin Gate Memorial in Ypres. In 2008, however, archaeological excavations in Ploegstreet, Belgium, found the remains of a soldier during excavation of a section of the German trench line (Brown & Osgood, 2009). A number of artefacts, but in particular the shoulder badges, specifically attributed the remains to a member of the Australian Imperial Force. Historical research (Brown & Osgood, 2009; Dussault et al., 2016) identified the Australian units that operated in the area and more specifically which unit saw action there. In 2010, anthropological


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Figure 2. In the early years of World War I, there were specific units of soldiers who buried the fallen. Later in the conflict, the Imperial War Graves Commission was created to recover the bodies of the dead, bury them in the new war cemeteries established after 1918, and mark their graves. The Commonwealth countries, as well as others such as France and Germany, created many of these cemeteries in Europe. In the picture on the left, a temporary cemetery created in 1916 for Canadian soldiers killed in combat. In the image on the right, detail of a current cemetery of the Commonwealth War Graves Commission established in Wijtschate (Belgium).

analysis was undertaken (Dussault et al., 2016) at the Commonwealth War Graves Commission in Ypres, Belgium, in order to obtain information such as the biological profile (age, sex, stature, ancestry) that may assist in narrowing down the list of persons to whom those remains belonged to, therefore comparing the skeletal data with historical records of fallen soldiers. In addition, an assessment of peri-mortem trauma was undertaken to reconstruct the circumstances surrounding the individual's death. Historical documentation indicated that Private Alan James Mather was 37 years old and 170 cm tall when he died. The analysis of the skeletal remains (Dussault et al., 2016) indicated a male, likely to be between 30 and 40 years of age, with a stature interval of 165–178 cm. A number of pathological conditions were observed as well as peri-mortem trauma to the skull, to a scapula, and to some ribs. Chemical analysis on the remains of the soldier provided possible geographical regions of provenance (Dussault et al., 2016) which then led to narrowing down the list of possible relatives for DNA analysis. A reference sample was taken from the presumed niece of the soldier and this enabled positive identification.

These investigations not only provide a dignified burial and when possible a name on a gravestone, but also information on the soldier's background and the stresses on the body (in this case, the skeleton) as a result of the war. Although history, archaeology and other disciplines have provided a reconstruction on what life was like during the Great War (e.g., Desfossés et al., 2009; Hanson, 2006), the analysis of the human skeletal remains complements that picture of the past.

**«Investigations provide also information on the soldier's background and the stresses on the body as a result of the war»**

## IDENTIFICATION OF WWI CASUALTIES

Historical research, archaeological recovery, analysis of artefacts and personal effects (Figure 3), and anthropological analysis including craniofacial reconstruction (Figure 4) will assist in the identification process and can exclude candidates. However, where there is no identification disc clearly associated with a particular individual (see e.g., Dewilde et al., 2018), positive identification can only

be achieved by DNA analysis where there is a suitable relative or reference sample (see also Loe et al., 2014). DNA analysis in accredited forensic laboratories will be pursued by certain governments if there is a chance of identifying a soldier and suitable relatives have been found. In the case of a British casualty, once positive identifications have been made, the remains are buried, usually in a Commonwealth Grave cemetery or in a general cemetery with a CWGC tombstone.

Whilst archaeologists have found and recovered the remains, anthropologists in the laboratory tend to be responsible for taking DNA samples, with all the precautions necessary. DNA recovery from World War I remains (teeth, bones, hair samples) is often subject to a number of difficulties. A major limitation is that most cases are not pre-planned excavations, but casual discoveries, therefore exposing the remains and the relevant materials to the environment in uncontrolled circumstances (e.g., Ambers et al., 2018). Moreover, the risk of contamination increases without the relevant preventative protected equipment and the exposure to the atmosphere from its original environment such as ultra violet from the sun's rays can start to have a further detrimental effect. Contamination from a DNA perspective is paramount. It is important thus to minimise contamination during handling and storing. Elimination reference samples from those involved in the research are often advised to be taken and processed as a key component of an environmental DNA check for modern day contamination. Under EU regulations, these samples would fall under GDPR 2018 (General Data Protection Regulations) as sensitive data and would need to be treated and processed accordingly under the Act.

Weathering, brittleness and loss of bone density, and dental pathological conditions are all aspects that anthropologists who sample skeletal remains should consider when evaluating the best sample for DNA testing; however in many World War I cases anthropologists are often presented with very limited bones or teeth to choose from and a variation of sampling options are often not available. Preference for different types of bone (e.g., petrous bone vs long bone vs teeth) may vary from laboratory to laboratory as will their extraction protocols. Today, advances in technology allow us to apply new methods to compromised bones (e.g., Ambers et al., 2018). Automation (e.g., Qiagen EZ1 or Promega RSC Maxwell systems) has also significantly improved over the last five years and therefore quicker and more efficient extraction processes are becoming more readily available with specific bone protocols designed. Advances in human specific RT-PCR quantification and chemistry amplification have assisted in the analysis of genetic data using a number of designated software packages.


Figure 3. Shoulder strap of a German soldier's uniform recovered from a 1914 trench excavated in Wijtaschate (Belgium). Personal effects found next to human remains may be key to their identification. According to this piece, the soldier would have belonged to the 17th infantry regiment of the Royal Bavarian Reserve.

**«Most cases are not pre-planned excavations, but casual discoveries, therefore exposing the remains and the relevant materials to the environment in uncontrolled circumstances»**

At the DNA laboratories at LGC in London, the team led by one of the authors (VM) have examined 27 sets of human remains of WWI British casualties over a four year period from twelve different sites across Belgium and northern France. These samples were obtained in the mortuary by anthropologists from the CRICC Team, based at Cranfield University, following the directions of the DNA scientists at LGC. The condition of the remains varied from well preserved to poorly preserved skeletons. DNA extraction was carried out on a range of teeth (canines, molars) and skeletal elements including mandibles, vertebrae, radii, femora, and metatarsals. All extraction methods from the bones and teeth were processed for autosomal, Y chromosome testing and mitochondrial DNA sequencing (see Howard et al., 2013). From the samples tested, 100 % success rate for the testing of hyper variable I and II markers of the control region of the mitochondrial genome was observed and a 96 % success rate of Y STR markers using Y23 obtaining profiles suitable for comparison. Of these 27 sets of remains, DNA identification has been successful in 10 of these cases leading to burials with a name on the tombstone. The main challenging aspect with WWI identifications is the familial distance between the soldier who died in World War I and the relatives who

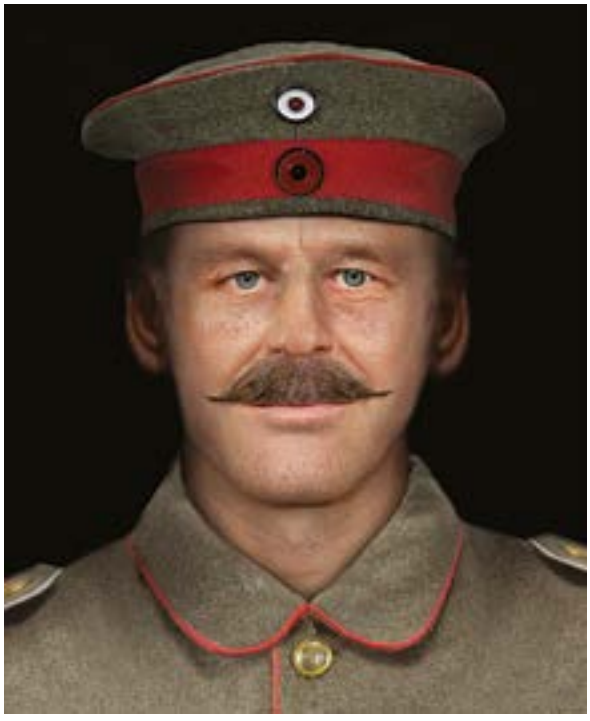

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Figure 4. Craniofacial reconstruction of a German soldier from the First World War recovered at Bullecourt (France) by the Operation Nightingale project, a private British initiative to rescue archaeological remains related to armed conflicts. The reconstruction technique can assist in the identification process and rule out candidates.

are alive today. In most instances, it is incredibly rare to find a close second degree relative (nephew or niece) and even rarer a first degree relative (direct descendant of the deceased) as they would be over 100 years old. Therefore family or genealogical trees need to be carefully assessed and available records reviewed to indicate the best candidates for testing. In all instances, DNA was compared to distant relatives at least three generations distant to the deceased soldier in question and additional evidence such as anthropology, archaeology, and historical war records relating to potential candidates were assessed as part of the identification procedure by an identification commission. Moreover, non-paternity and adoption, among others, are all aspects that should be considered as it is possible that historical records are inaccurate. From a DNA perspective, both a Y and a mitochondrial match between the soldier's and the donor's profiles would independently provide a statistical likelihood of more than 100,000 times indicating a strong supportive level of evidence; however this evidence should never be evaluated on its own merit. This again reiterates the importance of other sources of evidence to support identification. Thus, although DNA is a useful tool for identification, it is not the deciding piece of evidence in historical cases. All the evidence from the case

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Figure 5. The recovery and identification of remains from soldiers missing in armed conflicts allows them to finally receive a dignified burial. In the picture on the left, the funeral with honours of Alan James Mather, an Australian soldier who died in June 1917 at the Battle of Messines and whose remains were found in 2008 at an archaeological excavation in Ploegstreet (Belgium), in a section of the German trench. These were subsequently identified thanks, among other factors, to the fact that a reference DNA sample could be taken from the soldier's alleged niece, thus establishing a comparison. In the image on the right, tomb of Alan J. Mather in the military cemetery of the Commonwealth War Graves Commission at Prowse Point in Wallonia, Belgium.

Alex Francés. *Memorabilia II*, 2018. Paper, cardboard, and fabric, 139 × 100 cm.

should be taken as a whole and should be evaluated as such if presented to a coroner or an identification commission.

## CONCLUSION

Whilst 2018 marked the centenary of the Armistice and 11 November 2018 has been widely commemorated by people around the world (e.g., Hanson, 2006; Shubert et al., 2018), the efforts to recover and identify the fallen carries on. Behind those commemorations of the fallen lie the work of historians, archaeologists, anthropologists, geneticists, and other individuals, backed by their governments and often their families, who work to locate the remains of the missing, to identify them, and finally bury them with dignity (Figure 5). Some of the above organisations as well as others are currently also assisting in the recovery and identification of the Second World War dead and other conflicts. Historical evidence, access to the human remains, resources, and funding are also challenges from our end, but the increase in government and family support, other funding bodies, and an increase in qualified archaeologists and anthropologists, as well as other professionals, will see a never ending fight to find and identify the war dead.

**«The 2018 marked the centenary of the armistice of the First World War, but the work to recover and identify the fallen continues»**

REFERENCES

Ambers, A., Votrubova, J., Vanek, D., Sajantila, A., & Budowle, B. (2018). Improved Y-STR typing for disaster victim identification, missing persons investigations, and historical human skeletal remains. *International Journal of Legal Medicine*, *132*(6), 1545–1553. doi: 10.1007/s00414-018-1794-8

Barker, C., Wright, R., & Loe, L. (2014). Chapter four: Results part two – Anthropology. In L. Loe, C. Barker, K. Brady, M. Cox, & H. Webb (Eds.), *'Remember me to all'. The archaeological recovery and identification of soldiers who fought and died in the battle of Fromelles, 1916* (pp. 91–151). Oxford: Oxford Archaeology.

Brown, M., & Osgood, R. (2009). *Digging up Plugstreet: The archaeology of a Great War battlefield*. Sparkford: J. H. Haynes & Co Ltd.

Burke, K. L. (2012). Schmorl's nodes in an American military population: Frequency, formation, and etiology. *Journal of Forensic Sciences*, *57*(3), 571–577. doi: 10.1111/j.1556-4029.2011.01992.x

CWGC. (2018). *About us*. Retrieved on 18 December 2018 from https://www.cwgc.org/about-us

Desfossés, Y., Jacques, A., & Prilaux, G. (2009). *Great War archaeology*. Rennes: Editions Ouest-France.

Dewilde, M., Márquez-Grant, N., Saunders, E., Wessling, R., & Wyffels, F. (2018). *Een vergeten massagraf van Duitse soldaten in de 'Wytschaete Bogen'. Een toevalsvondst in Wijtschate-Galgestraat (Heuvelland, WestVlaanderen). Onderzoeksrapporten agentschap Onroerend Erfgoed* (101). Brussels: Agentschap Onroerend Erfgoed. Retrieved from https:// oar.onroerenderfgoed.be/publicaties/OAOE/101/OAOE101-001.pdf

Dussault, C., Brown, M., & Osgood, R. (2017). A soldier's story: Forensic anthropology and blast injury. In E. Schotsmans, N. Márquez-Grant, & S. Forbes (Eds.), *Taphonomy of human remains: Forensic analysis of the dead and the depositional environment* (pp. 445–451). Chichester: Wiley. doi: 10.1002/9781118953358

Hanson, N. (2006). *Unknown soldiers: The story of the missing of the First World War*. New York: Alfred A. Knopf.

Howard, R., Encheva, V., Thomson, J., Bache, K., Chan, Y.-T., Cowen, S., … Barallon, R. (2013). Comparative analysis of human mitochondrial DNA from World War I bone samples by DNA sequencing and ESI-TOF mass spectrometry. *Forensic Science International: Genetics*, *7*(1), 1–9. doi: 10.1016/j.fsigen.2011.05.009

Loe, L., Barker, C., Brady, K., Cox, M., & Webb, H. (2014). *'Remember me to all'. The archaeological recovery and identification of soldiers who fought and died in the battle of Fromelles, 1916*. Oxford: Oxford Archaeology.

Robertshaw, A., & Kenyon, D. (2008). *Digging the trenches: The archaeology of the Western Front*. Barnsley: Pen & Sword Books.

Shubert, A., Borcak, M., & McKenzie, S. (2018, 9 November). Why World War I is Germany's forgotten conflict. *CNN*. Retrieved on 21 December 2018 from https://edition.cnn.com/2018/11/09/europe/world-war-one-centenary-germany-intl/index.html

Stichelbaut, B. (Ed.). (2018). *Traces of war: The archaeology of the First World War*. Veurne: Hannibal Publishing Ltd.

Stichelbaut, B., Verdegem, S., Van Hollebeeke, Y., Dewilde, M., Wyffels, F., Ervynck, … Gheyle, W. (2018). The archaeology of the First World War. In B. Stichelbaut (Ed.), *Traces of war: The archaeology of the First World War* (pp. 12–31). Veurne: Hannibal Publishing Ltd.

Verdegem, S., Dewilde, M., Bracke, M., Wyffels, F., Decorte, J., & Stichelbaut, B. (2018). Missing in action. In B. Stichelbaut (Ed.), *Traces of war: The archaeology of the First World War* (pp. 64–83). Veurne: Hannibal Publishing Ltd.

Wessling, R. (2018). The influence of operational workflow and mortuary environment on identification: A case study from the WWI Battle of Fromelles. In K. Latham, E. Bartelink, & M. Finnegan (Eds.), *New perspectives in forensic human identification* (pp. 323–332). London: Academic Press.

Wilson, R. (2012). The burial of the dead: The British Army on the Western Front, 1914–18. *War & Society*, *31*(1), 22–41. doi: 10.1179/204243411X13201386799136

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