

## **Review Article**

# **The Death of William Leschallas, Illustrating Drawbacks to Official Documents and Skeletal Data to Estimate Prevalence for Syphilis or Cancer in 19th Century London**

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**Abstract:** The combination of documentary evidence with skeletal analysis can reveal much about the prevalence of a condition from past times. Both types of evidence, however, have limitations. Using these data Cox published a study in 1996 of nearly 1,000 skeletons, dating from the 1700s to the 1850s, from Christ Church, Spitalfields in east London. Only two skeletons were reported to have lesions consistent with syphilis or 0.2% of this population, and a review of deaths caused by syphilis listed in bills of mortality for London gave a mortality rate of less than 0.5% for syphilis. Since both data sets are roughly consistent they appear to support Cox's interpretation. Nevertheless, a restudy of William Leschallas' cranium raised the first doubt to this low rate in this population. Furthermore, the Royal Commission on Venereal Disease stated in 1916 that the rate of congenital and acquired syphilis was not less than 10% of the population in cities. The aim of this study is to understand such discrepancies. This was done by re-examining Leschallas' cranium and other skeletal data cited by Cox and Cox et al., as well as official documents and medical, legal, and religious texts to better estimate the prevalence of syphilis in 19th-century England. As a result, a review of these documents not only supports a prevalence of at least 10% for syphilis in early 20th-century London, but in the first half of the 19th century possibly over 50% of adult males believed they were infected with syphilis. Such a high perceived prevalence along with the social stigma of being infected with syphilis, and to a lesser extent cancers, led to the omission of syphilis from official documents. In regards to the lesions in Leschallas' cranium diagnosed as trauma from gunshot wounds, all but one are consistent with syphilis, and possibly one lesion may be cancerous, allowing for the possibility that others in this skeletal population were also misdiagnosed, especially considering there was considerable post-mortem damage to many skeletons. Moreover, it has been estimated that only 1% to 20% of individuals suffering from syphilis will develop skeletal lesions, raising the possibility that syphilis was underestimated in this skeletal population. Thus, a better understanding of stigmas in past societies can be a valuable tool in evaluating the validity of documentary evidence and as an influence in estimating the prevalence of such a condition.

**Keywords:** Cancer, Syphilis, Interpreting Gunshot Wounds in Cranium, Official Documents

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## **1. Introduction**

In 1996 Cox published a study of nearly 1,000 skeletons, dating from the 1700s to the 1850s, from crypts below Christ Church, Spitalfields in east London. Cox relied on a combination of data from both an examination of the skeletons and pertinent documents, such as bills of

mortality, to produce a very thorough study of most conditions, traumas, and aspects of life in general during this period. The data for syphilis, however, appears to be inaccurate. Only two skeletons were reported to have lesions consistent with syphilis or 0.2% of this population,

and a review of deaths caused by syphilis listed in bills of mortality for London revealed “fewer than 100 attributed deaths of roughly 20,000 annually (less than 0.5%)” [1]. Since both data sets are roughly consistent they appear to support Cox’s interpretation. Caution is, however, required: Cox et al. point out that many of the skeletons from Christ Church had considerable post-mortem damage due to the collapse of stacked coffins as well as acid degradation from lead coffins [2], allowing for the possibility that syphilitic lesions were mistaken for pre- and post-mortem damage. In regards to official documents, they may not accurately report an individual’s condition, especially conditions like syphilis and cancers due to social stigma. A case that highlights such difficulties is that of William Leschallas who died on 13 December 1852 at the age of 57 and his was one of the skeletons removed from Christ Church. When his cranium was first examined “by at least seven experienced skeletal biologists, all of whom considered that the surface damage and three large apertures in the cranial vault were the result of post-mortem decay and damage” [2]. A later review of the coroner’s report revealed that Leschallas committed suicide by shooting himself in the right temple while suffering from a form of depression, termed “involuntional melancholia”, which was triggered by a major event. This event was believed to have been the destruction by fire of Leschallas’ paper mill in Chatham, Kent about a year before his death after which Leschallas was convinced he was financially ruined, leading to a failed attempt at suicide on 5 March 1852 [2]. His estate, however, excluding real estate, was valued at over £95,000 [1], which when adjusted for inflation would today be over £12,000,000.00 or nearly \$16,000,000.00 [3].

With this knowledge Cox, Molleson, and Waldron decided to re-examine the cranium. They located the fatal entry wound in the right sphenoid, and stated that the exit wound perforated both parietals with the inferior edge at the Lambda [2]. An examination of the exit wound, however, indicates it is an osteolytic lesion, possibly from some form of brain tumor or infection, like a pyogenic osteomyelitis, or even a syphilitic lesion. They also reported that two lesions on the frontal bone may have resulted from the failed suicide attempt [2]. These two lesions, however, are consistent with syphilitic lesions. As such, Leschallas’ severe depression was probably the result of tertiary syphilis or both syphilis and a brain tumor, leading to his suicide. Though, if this were so, depression caused by syphilis or a brain tumor would have been listed in the coroner’s report. A review of societal views and laws from this period suggest such omissions, especially for syphilis and cancers, were relatively common from the 16th century to well into the 20th century, making it difficult to estimate the prevalence of both conditions, like Cox’s estimate, resulting in a significantly lower estimated prevalence for each than probably existed. A hindrance to this study is that while the remains of William Leschallas are still in the possession of the Natural History Museum in London and belong to Christ Church requests for access to study the remains and for new photographs and x-rays to be

taken in November of 2017 were denied. Furthermore, they did not have any of the original photographs or notes published or cited during previous studies. Thus, only enhanced photographs from the previous publication by Cox et al. were available for this study [2].

## 2. Lesions

According to Cox et al. “The smallest, oblong lesion (36 mm x 11 mm) is situated to the left of the metopic suture. The greatest length is on a line from the lateral edge of the orbit to the midpoint of the metopic suture. This direction is consistent with Leschallas turning his head sharply to the right as he fired. The bullet may then have ripped away the outer table and part of the diploic frontal bone. The bone surface, apart from a central fissure, has healed although the diploic bone has not been rebuilt. Consequently, the surface is depressed by 3-4 mm” (Figure 1A) [2]. They go on to state that this lesion was consistent with a bullet striking the frontal bone at a very narrow angle, but there was no evidence of metal residue from a bullet [2].



**Figure 1.** 1A a wound or syphilitic lesion, 1B necrotic bone (Altered from Cox et al. 1990: figure 5 [2]).

The second lesion is irregular in shape (maximum 34 mm x 25 mm) located posterior and at the same level to the previous lesion and anterior to the coronal suture (Figure 1B) [2]. Cox et al. noted that the “bone appears necrotic, there is no apparent sign of healing either visually or radiographically. This lesion could be the result of flash-back burning from a bullet with the cauterized bone becoming necrotic” [2].



Figure 2. Entry wound in the right sphenoid (Altered from Cox et al. 1990: figure 1 [2]).



Figure 3. 3A entry wound, 3B exit wound or lesion, 3C damage with possible lesions (Altered from Cox et al. 1990: figure 2 [2]).

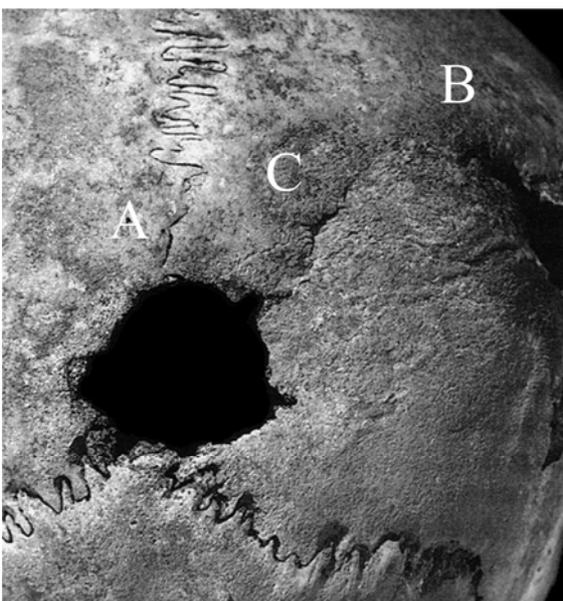


Figure 4. 4A wound or lesion, 4B and 4C possible lesions or post-mortem damage (Altered from Cox et al. 1990: figure 3 [2]).

Cox et al. then noted that the fatal entry wound was a small, elliptical perforation approximately 10.5 mm x 16 mm in the right sphenoid (Figures 2, 3A), and from their description the inner table is beveled, a diagnostic trait of entry wounds [2]. Furthermore, it is located where the entry wound was described by the surgeon in the coroner’s report. What Cox et al. cited as an exit wound is nearly circular (28 mm) and perforated both parietals with the inferior edge at the Lambda (Figures 3B, 4A) [2].

Additionally, on the right parietal is an irregular shaped lesion (c. 20 mm x 10 mm). “From this a fracture spread backwards in a roughly circular path, ending in its lower part in the third perforation.” Cox et al. did not believe this damage was caused by a bullet because the perforation lacks the beveling associated with a bullet wound (Figures 3C, 4B) [2]. They also point out that many of the skeletons from Christ Church had considerable post-mortem damage due to the collapse of stacked coffins as well as acid degradation from lead coffins [2]. Based on these data, Cox et al. proposed that Leschallas fired a low-velocity pistol, and the bullet passed through his right sphenoid bone, hitting the clivus and damaging the left anterior clinoid process. It then deflected off the clivus at an angle of 100° and finally exited through the back of the head (Figure 5) [1-2]. A review of the testimony given at the coroner’s inquest published in the *Times* raises doubt.

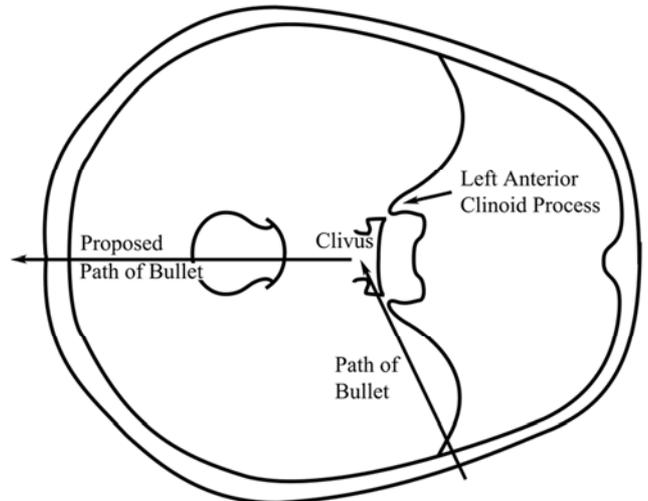


Figure 5. Sketch of proposed path of bullet, not to scale.

### 3. Excerpts of Testimony Given at Coroner’s Inquest

Edward Gissing, Leschallas’ warehouseman, who also lived in Leschallas’ house, was the first of three men to give testimony. Gissing stated that at “about a quarter to 8 o’clock, he was in bed asleep, and was awoken by one of the women servants, who told him that she could not find Mr Leschallas. Hearing that he had not made his appearance at breakfast, witness proceeded to search the premises, and eventually he found him sitting between two piles of paper in one of the warehouses. His mouth was open, and his feet were stretched

across the pathway, which induced him to think that he was only asleep. He at once lifted him, when he found blood streaming from his head.” Gissing then stated that the “Deceased had been for at least a year in a very desponding state, which arose from his thinking that he had lost all his property. He expostulated with him, and endeavoured to show the mistake he had made, but deceased would only answer that he was sure it was a fact, and he could swear to it” [2]. Gissing went on to state that “On the 5th of last March he attempted to commit suicide.” In regards to the pistol used to commit the suicide, Gissing “never saw the pistol before. He found on searching that it was in his right hand. Another was also found, which was loaded with a very small charge of powder and a ball. The pistol he used on the previous occasion he procured at the time the Chartist riots were apprehended” [2]. These apprehensions took place on November of 1839 over 12 years before the attempted suicide.

According to John Leschallas, William’s brother, “He thought he had been suffering mentally for about 12 months. The disorder commenced some time after a mill that formed a principal part of his business was destroyed by fire, and he had an erroneous impression that he was in consequence going to ruin. ‘My impression is that his mind was decidedly wrong. I was never informed of what took place in March last until some considerable time afterwards. He told me himself of it, and extracted a promise from me that I would never mention it to another person’” [2]. John also stated that his brother avoided any other company, and William believed the figures given to him, proving he was wealthy had been “conjured up to deceive him.” After a request from a juror on the existence of a suicide note, the coroner noted after reading it that William believed he was being watched [2]. Thus, William Leschallas appears to have been suffering from both paranoia and depression.

William Sedgewick Saunders, surgeon, was next to testify, and “he was sent for that morning to see the deceased, and on his arrival found a contused wound on the right temple and a considerable discharge of blood from the wound. From the appearance of the wound, he had no doubt that it had been caused from a bullet. The muzzle of the pistol must have been placed very near the skin. A second pistol was found loaded, with a cap upon it, which, upon unscrewing the barrel, was found to contain a bullet and only two grains of powder. The wound and loss of blood were the cause of death. The jury returned a verdict of ‘Temporary Insanity’” [2].

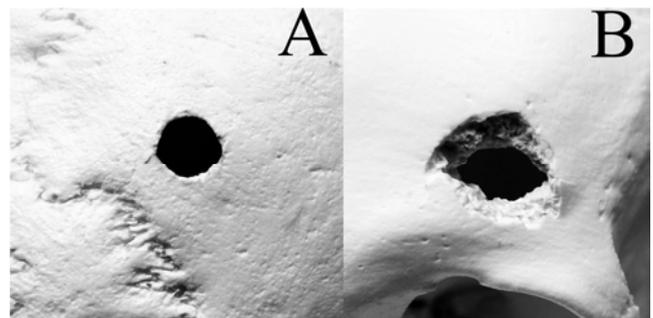
#### 4. Osteolytic Lesion Instead of Exit Wound

A bullet with the force to create an exit wound 28 mm in diameter, approximately twice the size of the entry wound (10.5 mm x 16 mm), would have been easily visible, and the exiting bullet would have sprayed blood, brain matter, and bone behind the body, also easily visible. Saunders gives a detailed description of the entry wound but does not mention an exit wound. This is also noteworthy for Gissing who

thought Leschallas was asleep and only saw blood when lifting him. Such a large exit wound along with sprayed bone, blood, and brain matter in the surrounding area would have been impossible to miss, and it would have been mentioned during the inquest.

Furthermore, a publication review has not found any parallels for a low or high velocity bullet bouncing off the clivus or any of the paranasal sinus bones then passing through the back of someone’s head. Bullets that ricochet off bone do so because they lack enough energy to penetrate bone [4]. Thus, a bullet, ricocheting off the clivus would lack the energy to perforate any other bone let alone parietal bones, which are thicker than the clivus (Figure 5). Furthermore, bullets with enough energy to pass through a cranium that enter the sphenoid or temporal bones will exit the same bone on the opposite side of the cranium [4-5].

In regards to this exit wound, no beveling is described in the report and none is visible in the photograph. Such beveling of the outer table is indicative of an exit wound, especially for thicker cranial bones, like the parietals (cf. Figures 4A, 6B) [5]. Another inconsistency is the larger size of the exit wound. When exit wounds are larger than entrance wounds it is the result of a bullet wobbling or tumbling along its long axis, producing a more elongated exit wound [5]. Leschallas, however, was using a cap and ball pistol: these bullets were spherical. When steel spheres, which do not deform, were used as bullets, exit wounds were always smaller than entrance wounds due to decreasing velocity [5]. Thus, even if this bullet retained its spherical shape, it would have decreased in velocity before perforating the parietals, making an exit wound smaller than the entry wound. If it had deformed, it would have made a smaller oblong hole similar in size and shape to the oblong entry wound. Neither is the case (Figures 6A, 6B).



**Figure 6.** 6A entry wound (c. 9 mm), 6B exit wound (c. 9 x 12 mm inner table, 16 x 20 mm outer table) (Photograph from cast #CS014, Diane France Casting).

Another factor is that the unfired pistol had only two grains of powder. Even a small screw-barrel cap-and-ball pistol from this period would be loaded with about nine grains of powder [6], and if Leschallas loaded both pistols with about the same amount of powder, which seems likely, such a small amount of powder would simply lack the force to propel a ball completely through a cranium, let alone travel such a long distance from the sphenoid to the clivus then to the parietals.

Moreover, pure lead was used to make bullets in the mid-19th century, and it is softer than lead in modern bullets,

which are alloyed with 1-2% of tin. Pure lead is so soft it only has a Brinell hardness of 5 HB (glass = 1550 HB). Pure lead was used in cap-and-ball pistols because when fired a pure-lead ball would deform, helping to seal a bore to reduce escaping propellant gases, increasing velocity. Deformation and fragmentation of even later alloyed-lead bullets (up to 22 HB) was so common it resulted in the Hague Peace Conference of 1899 mandating military rounds be copper jacketed to reduce the severity of gunshot wounds [7]. Today non- or partially-jacketed bullets are likely to deform and remain in an individual [8]. Thus, pure lead would be even more likely to deform and fragment on impact. According to Cox et al., opaque particles appearing in the radiograph define the entrance wound and the bullet's path to the exit wound (Figure 7) [2]. They do not explain how a bullet traveling in a straight line down the center of a brain from clivus to parietals would leave a path of lead fragments embedded in parietal and temporal bones (Figure 5). Since most lead fragments are concentrated in the temporal bone, it is consistent with a bullet that fragmented after hitting the clivus with fragments damaging the left anterior clinoid process and most fragments embedding in the left temporal bone (Figures 7-8). Thus, all evidence indicates that the large circular hole in both parietals cannot be an exit wound.

This hole labeled as an exit wound has a band of pitting around the edges consistent with periostitis, indicating it must be an osteolytic lesion that formed prior to Leschallas committing suicide (Figure 4A). It is also well-defined with sharp edges and lacks evidence of remodeling, which is consistent with a punched-out osteolytic lesion. Furthermore, according to Cox et al., no evidence of lesions or trauma existed in the postcranial skeleton [2]. Osteolytic cranial lesions can be caused by a number of conditions. Leschallas's age of 57, however, is inconsistent Langerhans cell histiocytosis or most forms of Histiocytosis X, making such a lesion [9]. An exception, however, to Histiocytosis X is an eosinophilic granuloma, which can produce a solitary cranial lesion described as "punched-out, well defined, lytic lesion most commonly seen in the parietal or frontal bone" [10]. While rare in adults, a recent case study describes a 57 year old male with a solitary cranial eosinophilic granuloma located in both parietals superior to the occipital bone, measuring 16 by 18 mm [11].

Such a large and single lesion is also inconsistent with tuberculosis or multiple myeloma, which typically produce smaller and more numerous lesions [12]. A single osteolytic cranial lesion, however, can be caused by a plasmacytoma [9, 13], and some metastatic carcinomas can form single osteolytic lesions. For example, a case report describes a 54 year old woman with a primary lung cancer who developed only a single osteolytic lesion in the right parietal [14]. Thus, some form of a cranial tumor is consistent with the evidence, and such tumors can cause severe depression [15]. Furthermore, if this lesion presented as a small dense mass covered by skin and hair, the surgeon and other officials could have missed it or mistaken it for a recent trauma, such as Leschallas falling backwards and hitting his head after

shooting himself. Still, other inconsistencies exist.

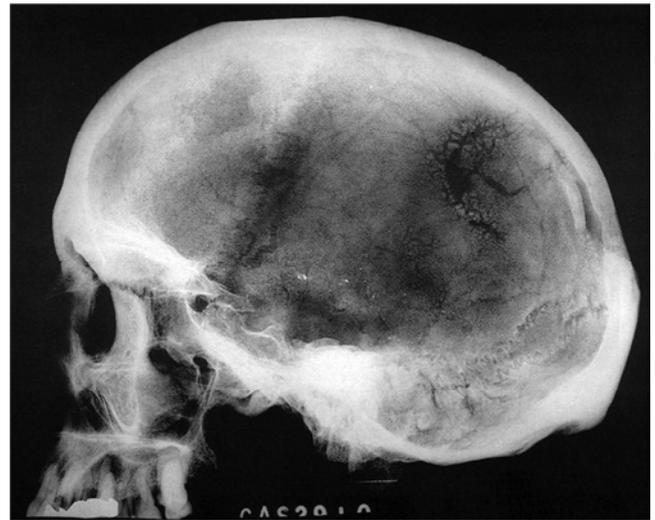


Figure 7. Radiograph of Leschallas' cranium (Altered from Cox et al. 1990: figure 4 [2]).

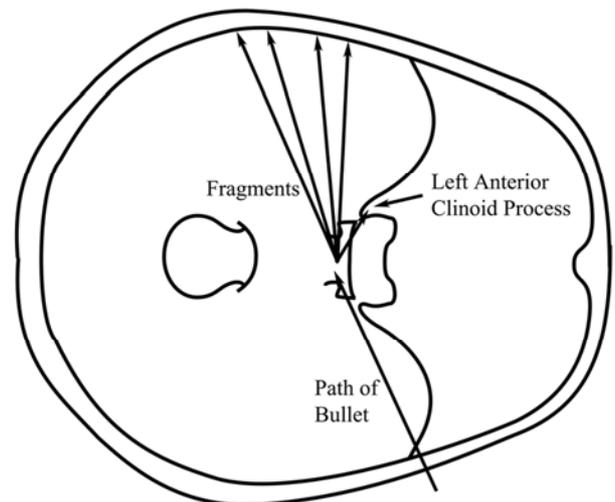


Figure 8. Sketch of path of bullet and proposed fragmentation, not to scale.

## 5. Syphilitic Lesions

Cox et al. proposed that Leschallas when first attempting suicide on 5 March 1852 flinched at the last moment causing the bullet to graze the left side of his frontal bone, creating a gutter wound and the pistol was so close to his head there was a second flashback wound [2]. However, based on the proposed angle of the bullet's trajectory for either of these "wounds" on the left side of the frontal bone (Figure 1A, B), the gun had to have been fired with the left hand while the fatal shot that killed Leschallas was fired with the right hand. Additionally, since this gutter wound would have been inflicted only 8 months prior to the suicide and since this attempted suicide was mentioned twice in the coroner's report [2], scarring from this wound would have been easily visible to the surgeon who initially examined Leschallas as well as coroner and jurors before the inquest.

A coroner convened an inquest after being "informed that

the dead body of a person is lying within his jurisdiction, and there is reasonable cause to suspect that such person has died either a violent or an unnatural death, or has died a sudden death of which the cause is unknown.” Then the coroner’s jury “after viewing the body and hearing the evidence, shall give their verdict, and certify it by an inquisition in writing setting forth, as far as such particulars have been proved, who the deceased was, and how, when, and where he came by his death” [16]. In the mid-19th century, such an inquest was held in a victim’s home, public room, or even outside. The two main requirements being a table large enough to lay out the body as well as enough space for coroner, witnesses, jury, and spectators to view it [17]. Leschallas’ inquest was held in his home in the afternoon on the day of the suicide [2], and the coroner and jury after inspecting the body would have been well aware of any visible lesions on Leschallas’ head.

Granted, forensic techniques have developed considerably since the mid-19th century, but even in 1852 such obvious scarring from a gunshot wound from a previously attempted suicide caused by a pistol fired from the left hand followed by a successful suicide attempt with a pistol fired from the right hand would have been mentioned during the inquest and in the coroner’s report as it would allow for the possibility that a second person fatally shot Leschallas and that he was both sane and did not commit suicide. As discussed below, a ruling of foul play, instead of suicide, would benefit both Leschallas and his family, but only the fatal wound was mentioned.

As previously stated, this gutter wound consists of an oblong depression located left of the metopic suture where the outer table and part of the diploë were removed but the inner table was unaffected, and healed bone around this lesion has a folded or wrinkled appearance (Figure 1A) [2]. These characteristics are consistent with a syphilitic lesion caused by gummatous destruction, and such lesions typically develop first in the frontal bone on the outer table by extension from an infection of the soft tissues of the pericranium. Extensive bone and then diploë resorption follows, and in the center of a lesion, a depression is formed. Around this lesion new bone gradually becomes very sclerotic and the borders acquire a folded or wrinkled appearance [18]. The lesion in Figure 1A is consistent with this description. The second most common place for syphilitic lesions to form is the parietals, and a second depression with a wrinkled appearance is in the right parietal bone at Figure 4B with possibly a smaller lesion at 4C. Cox et al. attributed the long fracture on the right parietal to postmortem damage (Figure 3C) [2]. Originally, syphilitic lesions in this region may have created a plane of weakness, and when the caskets collapsed or even shifted this fracture formed along this plane. Regardless, post-mortem damage cannot explain the apparent evidence of healing and wrinkling around these two lesions on the right parietal bone.

According to Cox et al., one reason they believed that the gutter wound was the result of the earlier attempted suicide was because of a lack of a healed lesion anywhere in the postcranial skeleton [2], but a lack of skeletal evidence for the attempted suicide could be the result of a number of scenarios.

Leschallas may have grazed only flesh or may have completely missed. It is also possible he loaded his pistol then lost his nerve. Finally, his pistol may have misfired during his first attempt, which could have been due to either mechanical malfunction or damp powder. The fact that one pistol was loaded with only two grains of powder instead of about nine grains would suggest Leschallas was not an expert with firearms. If so, during his first attempt he may have either loaded his pistol with old, damp powder or loaded it too soon before the attempted suicide, allowing the powder to absorb moisture, which is a problem especially in a place as damp as London, and the pistol did not fire. Additionally, the pistol may have misfired due to a mechanical failure possibly something as simple as a broken spring in the firing mechanism, especially considering Leschallas purchased this pistol about 12 years before the attempt. An advantage to one of these last two scenarios is that it would explain why he had two pistols, and why Gissing did not recognize the pistol from which Leschallas fired the fatal shot. Leschallas, by acquiring a second pistol and loading both, would increase the possibility that one would fire.

In regards to the second wound on the frontal bone, Cox et al. described it as necrotic without any evidence of healing, and may have been caused by “flash-back burning from a bullet with the cauterized bone becoming necrotic”, suggesting it was also darker in color. Again, evidence of such a large wound even after 8 months would have been visible when Leschallas’ body was examined by the coroner and jurors, but no mention is made in the coroner’s report. Continued pyogenic infection from syphilis, however, can lead to extensive bone necrosis combined with gummatous erosion, causing large sequestra to form [18]. In European crania large sequestra often show “darker discoloration of the necrotic bone”, and Ortner proposed that this sequestra formation “is due to exposure of the affected bone in scalp ulcerations” [12]. These descriptions of a second type of syphilitic lesion are consistent with the second lesion in the frontal bone (Figure 1B), and such a lesion, especially if it presented as a scalp ulceration, would have been visible to those viewing the body. It should also be noted that syphilis can mimic cranial tumors similar to a metastatic carcinoma [18], allowing for the possibility that the osteolytic lesion in both parietals was caused by syphilis or pyogenic osteomyelitis. Thus, Leschallas’ depression and paranoia were possibly caused only by syphilis.

## 6. Social Stigma of Syphilis and Its Influence on Accurate Documentation

Of course this does raise a question. Why did the coroner and surgeon fail to mention this individual was suffering from syphilis? While a single tumor on the parietals might be missed in such an examination, as discussed above, these lesions, regardless of their cause, would be obvious to the surgeon, coroner, and members of the jury, and would have been mentioned in the report. If syphilis was the cause, one

possibility was that since suicide alone would have carried a social stigma, syphilis would have been a further embarrassment. Yet, preventing the loss of £95,000 to the government would also have been an important factor to the family. As previously noted above, Leschallas' estate was valued at £95,000, excluding real estate, which represents the value of his moveable property. In England c. 1500 suicide was considered an egregious crime. If a coroner's inquest found that a person who committed suicide was sane or *felones de se* (felons of themselves), they were judged to have committed the felony of self-murder, after which either the Crown or a royal patent holder would confiscate all their moveable property. The body then had to be buried at a public highway or crossroads with a wooden stake driven into it [19]. Impaling a suicide victim appears to derive from a pagan belief that to do so would prevent a ghost from walking, and this practice was later transformed by the Church into a form of punishment for the sin of self-murder caused by the Devil [19]. For the family of a suicide victim there was a legal loophole in that if an inquest returned a verdict of *non compos entis* (not being of sound mind), moveable property could not be confiscated [19]. Nevertheless, prior to 1660 juries made a ruling of *non compos entis* in only about 2% of all suicide cases even when there was evidence of mental illness [19].

After 1660 there was a trend towards greater leniency for a number of reasons, and one of the most commonly mentioned was financial hardship suffered by families. During the last two decades of the 18th century inquests returned findings of *non compos entis* in 97% of cases [19]. The government could appeal to the King's Bench, which among its duties was to keep other jurisdictions, like coroners, within their proper bounds, but as time progressed the court itself had less and less interest in enforcing what were described as "odious" claims by the government [19]. Concurrently, as MacDonald points out, the "eighteenth century's taste for scientism, Enlightenment humanitarianism, neoclassicism, and, finally, Romanticism all contributed to more tolerant attitudes" [19]. Also, the medical opinion that mental illness was a cause of suicide, replacing the Devil, provided a rationale for leniency [19]. By the late 18th century even some prominent clerics supported mercy over punishment. Such a cleric, John Jortin, stated "in our country, where spleen and melancholy, and lunacy, abound the far greater part of those unhappy persons, who thus end their days, have a disordered understanding, and know not what they do: and in all dubious cases of this kind, it is surely safer and better to judge too favorably than too severely of the deceased; and our juries do well to incline, as they commonly do, on the merciful side, as far as reason can possibly permit; and the more so, since by the contrary verdict the family of the dead person may perhaps suffer much, and have sorrow upon sorrow and loss upon loss" [20].

In 1823 Parliament passed Act 4 Geo. IV. c. 52, which abolished the law directing coroners to impale and bury those who had committed suicide at a public highway or crossroads [21]. Those who were found sane (*felo de se*) would still have their property forfeited by the government, but their bodies were privately buried in a churchyard or other burial ground

between the hours of nine and twelve at night [21]. "The 2nd section of the same Act expressly declares, however, that it does not authorize the use of the Burial Service" [21]. In contrast, the law did not impose any penal consequences on those determined to be insane and not responsible for their act [21], which appears to indicate that a suicide victim declared insane could be buried during the day with full burial services.

While the clergy supported leniency there were limits. As directed by the Church "the verdict of the coroner's jury should have respectful attention, though it is not to be considered as an invariable law for the clergyman." Thus, if a "clergyman should feel convinced beyond doubt that there was no such insanity as to deprive the suicide of ordinary moral responsibility, then he is to remember (1) that he is a 'steward of the mysteries of God,' who has no right to misapply the blessings given him to dispense; and (2) that the scandal, and encouragement to suicide, which result from a too easy compliance, are in themselves great evils, which it is his duty, when it is within his power, to prevent" [21]. Thus, under these circumstances a clergyman had the right to withhold burial services.

A judgement of insanity for Leschallas had important ramifications, both financial for his family and religious for himself, which again if there was even the slightest possibility of murder, it would have been discussed by the jury as such a ruling would remove the stigma of suicide. In the coroner's report noted above there is an emphasis on the mental state of William Leschallas by both his brother and Gissing. Furthermore, the coroner, himself, raised the possibility of paranoia with his interpretation of the suicide note in that Leschallas thought he was being watched. What is curious is that mental illness as a cause of suicide was accepted by many in the medical community, and it was also known that some conditions, like syphilis, could cause mental illness. For example, John Howard in his medical text on venereal diseases in 1806 notes that "grief and dejection of mind" became more conspicuous during the secondary stage of syphilis [22]. Thus, a medical condition known to cause mental illness, especially for an individual with obvious cranial lesions, would more easily satisfy the legal requirement for a verdict of insanity as opposed to a condition like "involuntal melancholia", which as late as 1907, was recognized as an artificial grouping of various conditions [23]. Fear that it would be revealed that Leschallas was infected with syphilis may explain another anomaly. Cox et al. noted that William Leschallas was interred only five days after his suicide, which was "an unusually short interval for an adult" [2]. The coroner had five days to send the finding of a jury to the registrar of deaths. If any irregularity was then noted, the government could hold a new inquest [16]. Thus, interring Leschallas so quickly might have made it more difficult to hold a new inquest that might require a new finding. Syphilis or even cancer may therefore have been omitted because of a combination of a greater social stigma for them than suicide, and possibly a belief that syphilis was so prevalent among the male population of Leschallas' time that any male might contract it.

The stigmata to both cancer and especially syphilis are reflected by their rarity in death certificates, which, beginning in 1874, required a doctor to state a cause of death. In regards to syphilis, Dr T. H. C. Stevenson, Medical Superintendent of Statistics at the General Register Office of England and Wales, testified before the Royal Commission on Venereal Disease in 1913 and stated:

“The worthlessness of the returns as an absolute statement of the number of deaths from venereal disease scarcely requires demonstration. It is notorious that medical men do not—they simply cannot afford to—state such facts candidly on open certificates of cause of death handed to the relatives and copied on to public records carefully preserved for the information of any interested party. Letters from medical men stating that this is the case have been preserved at the General Register Office for the past two to three years” [24].

Two such letters state:

“Male, 34 years. Certified cause of death, ‘arteritis.’ Reply.—Cause— ‘syphilis’—not stated (as in almost all deaths from syphilis) owing to death certificate being non-confidential” [24].

“Female, 62 years. Certified cause of death, ‘paraplegia.’ Reply.—Syphilis, gummata, spastic paraplegia. One cannot put down the cause of death under the existing disgusting system when a certificate is hawked about among relatives for the delectation of prudes” [24].

As Szreter points out doctors were willing to certify syphilis as a cause of death “among workhouse, infirmary and asylum inmates, specifically among the illegitimate infants of single pauper mothers, where the doctor’s potential income was unaffected by his certification choices” [25]. While there is little doubt that saving a family from embarrassment was a genuine concern to doctors when assigning a cause of death, they were also influenced by the knowledge that if they did state syphilis as a cause of death on any official document in their regular practice, they would probably lose their patients to more discerning doctors.

A similar social stigma was associated with cancer. As late as 1931, H. Gideon Wells, a noted oncologist and pathologist, stated that death from cancer was still underreported even by doctors “in deference to a popular sentiment that there is something discreditable or disgraceful in cancer—perhaps a relic of theories that cancer is a form of syphilis or an evidence of decadence” [26]. Wells also noted a similar stigma in France by citing the eminent French surgeon and oncologist Pierre Delbet. “In France it is impossible to prepare accurate statistics of cancer. In many small towns practitioners never record a diagnosis of cancer upon the death certificate. Some have told me that if they did so they would lose all their patients because of the stigma” [26]. This practice of omitting cancer probably extended beyond small villages because Delbet also stated that “The law relating to professional secrecy is still in force; it is, a violation of that law to enter a diagnosis of cancer upon the death certificate” [26]. In England such a stigma also had practical consequences for a family as noted by a doctor in 1916 who wrote “Female, 67 years. Certified cause of death, ‘pyloric obstruction.’ Reply.—I

believe the disease was carcinomatous, but if I can help it I do not state in a certificate ‘malignant disease,’ as it militates against members of the family who wish to insure their lives.”[24]. Thus, if the osteolytic lesion in Leschallas’ parietals was caused by a malignant tumor that was visible to those examining the body, it would probably not have been mentioned in the coroner’s report due to the stigma attached to cancers.

Nevertheless, English libel and slander law did differentiate syphilis from most other conditions even cancers. John Berneye, in what appears to have been a book review that transformed into a critique on the haphazard nature of English law, wrote in 1872 “It is actionable to charge one with having the leprosy, the plague, or the syphilis; but it is not actionable to charge him with having any other disease. Such a charge is said to be actionable because it tends to degrade the person charged in the estimation of the public.” and “Still it is as disgraceful to have any other venereal disease as to have the syphilis, although a charge of having another venereal disease is not actionable” [27].

The severity of this law is highlighted by a proposal put forth by the Royal Commission on Venereal Disease in 1916. In regards to syphilis they note that “The difficulty of communicating with or warning the future bride, or her parents or other persons in a position to influence her action, is two-fold. We are informed by many witnesses that it might be regarded as a breach of professional confidence. There is also the possibility of the medical practitioner being sued or prosecuted. There is no doubt that to assert to a third person that anyone is suffering from a venereal disease is, if in writing, a libel, or, if by word of mouth, a slander.” Even if a doctor successfully defended himself in court “it must be admitted that the award of costs to him would usually be a very inadequate compensation for the loss of time and for the trouble caused even by a successful defence.” The Commission goes on to note that “in some cases, e.g., where he has simply expressed his opinion that the intending husband is ‘not cured’ or ‘is not yet in a condition to make it safe for him to marry,’ it might be dangerous for him to take on himself the burden of justifying, since a doubtful or speculative issue would then be raised. As the law now stands, the fact that the communication or warning had been made or given in good faith, with the sole object of saving the intending wife from the dangers which might arise from the proposed union, would not afford the medical practitioner even the qualified protection which is in some circumstances conferred on a defendant by the doctrine of privileged communication.” For these reasons the Royal Commission proposed a change in the law to make such communications privileged, and to allow the nullification of any marriage where one newlywed partner infects the other [24].

A. Maude Royden, a preacher and suffragist who worked among poor females, criticized the Royal Commission in that it did not protect married women. She specifically cites testimony by a doctor Yearsley who stated that 49 women in his care had 289 pregnancies of which 38 were miscarriages and 87 died in infancy. Of the 168 living children 54 were both

deaf and blind [28]. It should also be noted that a number of other doctors gave similar statistics to the Royal Commission [24]. Of Yearsley's testimony Royden points out that "the mothers are described as 'most of them...totally unaware' of the cause of these tragedies, and their medical adviser 'did not speak about the cause' to them. But most of us, probably, have come across cases in which one miscarriage or still-birth succeeds another, and the mother goes back to her husband in complete ignorance of the cause of such horrors. It is true that the Commissioners later recommend that the doctor who warns a man or a woman, or their guardians, that an intended spouse is not fit to marry, should be protected from a possible libel action, such warning being made 'a privileged communication'; but this, while good so far as it goes, does nothing to protect the woman already married" [28]. Thus, these testimonies both highlight the social stigma attached to syphilis as well as the legal consequences for doctors well into the 20<sup>th</sup> century.

Since coroners were elected officials, they were under similar social pressures as doctors. If a coroner was willing to list insanity from syphilis or cancer as a cause of suicide or even discuss it during an inquest, then his chances of re-election would be unlikely. At the time of Leschallas' suicide, William Payne was coroner of the City of London and Southwark, and this must have been a desirable position as he was in competition with four other individuals for it [29].

Payne has been described as having "a modern public relations savvy" especially in regard to the importance of publicity garnered from newspapers. His savvy is best illustrated by his attempt to expand the jurisdiction of coroners to include fires because unless a suspect was in custody no one had a legal purview to inquire into the cause of a fire. He held a number of such inquiries from 1846 until 1851 when the appropriate London officials decreed such inquiries were outside his jurisdiction. During this period, however, the inquiries garnered him considerable support and fame from the people as well as newspapers, like the *Illustrated London News* and the *Times* [30].

He even appears to have prepared his own news releases. One included a note of thanks from his jurors:

"That the best and sincerest thanks are due from, and are hereby given by, this jury to Mr. W. Payne, coroner for the city of London, for the lengthened, patient, and complete investigation as to the cause of the fire at No. 6, Gracechurch Street, on Sunday morning last, we further desire to express our greatest satisfaction at the revival by the gentleman of the ancient practice of holding courts of inquiry on all such fearful occasions in the city of London, which, we doubt not, will be productive of most important results" [30].

Thus coroners understood the importance of publicity, and the press appears to have always been welcome at inquests since newspapers from this period are one of the best sources of inquest transcripts. A transcript of Leschallas' inquest was published in the *Times* the morning after the inquest [1-2]. Both coroners and doctors were therefore well aware of the importance of discretion to keep their jobs. In the opinion of Royden, even in 1917, "The unfortunate effect of secrecy and

indifference combined may be measured by the almost complete absence of any statistics" [28].

Another factor influencing both doctors and coroners from divulging syphilis as a cause of death especially in the earlier two-thirds of the 19th century is that this population probably believed that syphilis was far more common and possibly more deadly among them than did earlier or later populations. The first attempt at estimating the prevalence of syphilis in the United Kingdom was the Royal Commission on Venereal Disease, which sat for over 2 years, beginning in 1913 and their final report was published in 1916. They noted that little clinical data were being collected at this time and what data were collected were incomplete. For example, at London insane asylums 7.9% of total admissions were diagnosed with general paralysis or paralytic dementia, which is an inflammation of the membranes of the brain and adjoining cerebral tissue, leading to cerebral atrophy. Of these, 14 to 15% were male and 2 to 3% were females. No other conditions caused by syphilis, however, were recorded in these asylums, resulting in lower estimates than actually existed [24]. According to the Royal Commission, a possible reason that general paralysis was the only form of syphilis recorded is that the public was not aware that general paralysis was caused by syphilis [24]. The Royal Commission estimated that the total cost of asylum treatment in England and Wales from only syphilis could not be less than and was probably considerable more than £150,000 a year [24], which when adjusted for today's inflation would be approximately £12,500,000.00 or about \$16,700,000 [3]. It should also be noted that expert witnesses for each institution appearing before the Royal Commission were of the opinion that the actual number of people with acquired syphilis was considerably higher than suggested by their data [24].

Congenital syphilis also appears to have been a relatively common condition. As a cause blindness, "Of 1,100 children in London blind schools, Mr. Bishop Harman states that 31.2 per cent. of cases were certainly, and in addition, 2.8 per cent. probably due to syphilis" [24]. In regards to deafness, "One witness stated it was possible that about 25 per cent. of congenital deafness was due to syphilis." and "Of 845 children suffering from some acquired deafness in London County Council Deaf Schools, 7.21 per cent. were adjudged to be congenital syphilitics." Furthermore, "the percentage of deafness associated with syphilis was about twice as great in girls as in boys." The commission went on to state that these were incomplete data [24], resulting in further underreporting.

Another source of data were Wassermann tests taken from those in asylums, hospitals, and poor law infirmaries as well as those taken during medical exams for jobs. At the time of the Royal Commission, a Wassermann test was believed to be a reliable test for syphilis. Only later was it discovered that conditions that caused fevers, like malaria, measles, and pneumonia as well as some transient body states, such as pregnancy and aspects of aging among those over 60 years old could give false positives because a positive reaction results when the test detects cardiolipin, which all of the above can produce [25].

Based on all these various data the Royal Commission

stated that “While we have been unable to arrive at any positive figures the evidence we have received leads us to the conclusion that the number of persons who have been infected with syphilis, acquired or congenital, cannot fall below 10 per cent. of the whole population in the large cities, and the percentage with gonorrhoea must greatly exceed this proportion” [24].

In 2014, Szreter reviewed the data from the Wassermann tests published by the Royal Commission, and noted that two of the tests were performed by labs with adequate standards to properly and consistently process samples, and all participants in both tests were males below the age of 58 in good health without any fever causing conditions and lacking any other factors that would result in a false positive reaction. He stated that “valid estimates of the absolute rates of prevalence of the disease” could be calculated from these two data sets [25]. After making appropriate statistical corrections, Szreter stated that the prevalence of acquired syphilis in men aged in their mid-thirties in London in 1911-1912 was 11.373% while rural districts were considerably lower at 4.861% [25]. Szreter also cited an estimated prevalence for various social classes throughout England and Wales with upper and middle classes at 8.293% and the unskilled working class at 11.781%, and the lowest prevalence was among agricultural workers at 2.966% [25], suggesting in large cities, like London, infection rates for men in all classes ranged between 7 and 12%. Considering that males had considerably higher rates of syphilis than females in the data published by the Royal Commission’s report, as in asylums where general paralysis affected 14 to 15% of males and 2 to 3% of females, an average prevalence of 11% for men in London seems consistent with the evidence published by the Royal Commission. There is no known variation in factors to suggest these rates were lower for men in London throughout the 19th century, and what evidence exists, as discussed below, suggests syphilis was believed to infect a larger percentage of the population in cities at the time of Leschallas’ suicide.

Spongberg, in her study of syphilis and prostitution in 19th-century England noted that “The decline in syphilis amongst troops had begun to show up in army returns from 1860, some four years before the first Act [Contagious Disease Act of 1864] was passed, and there was evidence to suggest that it had been declining in both the military and civil population since the 1850s” [31]. The Contagious Disease Act of 1864 allowed policemen in four specified port and army districts to arrest any woman suspected of being a prostitute with venereal disease. If a woman was found to be diseased, a magistrate could order her detained in a lockup hospital for a maximum of three months. Any woman refusing an examination could be imprisoned for up to two months. The Act of 1869 extended the number districts to eighteen and the period a woman could be detained to nine months [31]. In less than two years under the Act of 1864, which covered only four districts, 815 women were arrested and of these 692 or 84.9% were declared diseased [32].

The Acts were repealed in 1886 largely due to the evidence

presented at hearings to a select committee created by the Government to evaluate the Acts, which were held between 1879 and 1881. Testimony given revealed that the decline in cases of syphilis noted above was largely due to doctors becoming more skilled in diagnosing primary syphilis from other conditions. Even so, Spongberg points out that testimony given to this committee showed that “many doctors still considered any sore on the genitals as definitely contagious and more than probably syphilitic” [31]. Some doctors believed even local sores caused by a lack of washing with soap and water or wearing soiled clothing were still being diagnosed as syphilitic, and one factor in the decrease of syphilis cases in the late 19th century was due to improved hygiene [31]. Another factor in the decline in reported syphilis cases was a decrease in the use of mercury treatments for syphilis [31]. Even if an individual had a sore caused by poor hygiene that was diagnosed as syphilitic a common practice was to treat it with mercury, which could have grave affects, including neuropathies and kidney failure with many dying from the treatment [33]. Thus, a significant number of men and women with non-syphilitic sores were given mercury treatments and had reactions, confirming in their minds and their doctor’s mind a diagnosis of syphilis.

This practice of misdiagnosing non-syphilitic sores as syphilitic as well as their subsequent treatment with mercury probably had an unexpected consequence. While it was widely accepted that most men contracted syphilis from prostitutes [1, 31], another belief of this period was that all women could naturally create and spread venereal diseases. For example, after citing a number of case studies consisting of only what he described as honorable and respectable couples that had contracted syphilis or gonorrhea, Francis Eagle stated in *The Lancet* in 1836 that these cases were evidence that the “acrid discharge” from even the “most delicate”, “modest”, and “clean” females could cause both gonorrhea and syphilis [34]. This was not an isolated belief. In 1864 a committee was formed to take testimony, evaluate, and give recommendations on The Contagious Disease Act of 1864 before it was implemented. This Committee consisted of eminent medical specialists, such as F. C. Skey, former president of the College of Surgeons and the committee chair, while witnesses were of the civilian and military medical elite. These included the Queen’s physician, William Jenner, and her surgeon, James Paget. Of these witnesses six still believed that women could spontaneously generate syphilis [31].

A third belief was that gonorrhea was an early form of syphilis. In 1761 John Hunter, an eminent Scottish physician inoculated either himself or a healthy patient [there is dispute in the literature] with pus taken from a patient diagnosed with only gonorrhea. Hunter, or his patient, then developed syphilis. It never occurred to Hunter that he had taken a sample from an individual suffering from both syphilis and gonorrhea, but based only on this experiment, Hunter stated that gonorrhea was an early stage of syphilis. This unity of virus theory was widely accepted in Britain, and most British doctors continued to support it in the 1840s and many in the 1860s [31]. Even in the 1860s among lay people the belief that gonorrhea was a

form of syphilis may still have been widespread. As previously mentioned, an individual could be sued for libel or slander if they wrote or said someone else had syphilis. However, in 1868, John Townsend wrote in his *A Treatise on the Wrongs Called Slander and Libel* that it was now actionable to charge that someone had gonorrhoea, and he cited two such litigated cases, *Watson vs. McCarthy* and *Wilson vs Holdridge* [35]. Thus, while this belief was waning among medical practitioners it appears to have spread to other disciplines, but it was short lived. Hunter's theory was finally proven wrong with the discovery that *Neisseria gonorrhoeae* or gonococcus caused gonorrhoea in 1879 and that *Treponema pallidum* caused syphilis in 1906 [24].

As previously noted, the Royal Commission of 1916 stated that the percentage of the population with gonorrhoea greatly exceed the percentage with syphilis [24]. In 1911, Christabel Pankhurst, who was appointed a Dame Commander of the Order of the British Empire in 1936, published *The Great Scourge and How to End It*. In it she states that 75-80% of all men in Britain were infected with gonorrhoea while an undetermined yet "considerable percentage" of men were infected with syphilis [36]. In a review of the extant data before 1918, Szreter proposed a more likely ratio of gonorrhoea to syphilis at 3:1 [25]. Thus, since the prevalence of males with syphilis in London was about 11%, then about 44% of males were infected with a combination of both. Moreover, since for much of the 19th century gonorrhoea was believed to be an early stage of syphilis roughly 44% of the male population would have thought that they had syphilis. The percentage of the male population in London who thought they had syphilis must have been even higher than 44% because as previously mentioned most doctors for much of the 19th century were of the opinion that any sore on the genitals was probably syphilitic and were treating some of these patients with mercury treatments. Such high numbers of infected individuals were probably rationalized by the belief that, like syphilis, an uninfected woman could infect an uninfected man with gonorrhoea. According to Sponberg, "Sex during menstruation, too much sex, too little sex, sex with a woman after too much alcohol or asparagus, all were said to cause gonorrhoea in men, while leaving the woman unaffected" [31].

Finally, there were also healthy individuals who suffered from hypochondria and self-diagnosed themselves with syphilis. For example a doctor C. B. Godfrey stated in 1797 that "I have a lady of this description at this moment, a patient of mine, who I shall have more trouble I fear, to persuade that she is perfectly well in her health, than to cure seven that are actually diseased." He goes on to state "I am also indebted to Dr. Buchan's Treatise on the Venereal Disease, for only by his book was she infected" [37]. Thus, when considering the combination of men in London who were infected with syphilis or gonorrhoea or were misdiagnosed as having one of these conditions or self-diagnosed with syphilis probably over 50% of the adult male population believed they were infected with syphilis.

Furthermore, a higher percentage would have a family

member or friend whom believed they were infected. As such, nearly all men would be inclined to omit syphilis in any official document. This is especially so considering the insidious nature of syphilis. As Dr. Charles Drysdale, senior physician in the Metropolitan Free Hospital, stated in 1881 "Syphilis is so uncertain that if you have the slightest attack of it, it may kill you in the long run. If a person has had syphilis at the age of 18, they may die of it when they are 60" [38]. Furthermore, a number of experts giving testimony to the Royal Commission expressed the opinion that syphilis was less virulent than it had been in previous generations, except for some cases brought from abroad [24]. Even so, this less virulent strain when compared to other "killing diseases syphilis comes third or fourth" [24]. While this is an overstatement, it highlights the belief that syphilis was a common cause of death in the early 20th century and was even more deadly in previous generations. This degree of uncertainty for such a virulent and deadly disease had a psychological affect as noted by Howard in 1806: "If a man thinks at all, the idea of having the lurking seeds of this deplorable malady within him, is a sword perpetually hanging over his head; it mixes with his most secret thoughts, damps every pursuit, and poisons every comfort of his life. There are certainly many men, whose minds are more injured than their bodies" [39]. Royden noted in the early 20th century a similar state of mind when gonorrhoea and syphilis were known to be two different conditions, and how the discovery of salvarsan in 1907 brought new hope for those infected with syphilis. "The individual sufferer is more willing to try, the public to provide, a remedy of so sovereign efficacy as salvarsan; while before a feeling almost of despair made the sufferer indocile to treatment, and the public apathetic" [28].

Thus, even the most sanctimonious or prudish coroner or juror of Leschallas' time who only had sex with his modest and clean wife could never be certain if he would be infected by her acrid discharge. If so, how was a juror to know the same had not happened to the individual they were judging? For the combination of reasons discussed above it is understandable why syphilis did not appear on official documents, like inquests and death certificates except for the institutionalized poor.

A third type of documentation was bills of mortality, which were weekly statistics collected by parish clerks, beginning in 1592 and continuing until 1858. There was, however, a short hiatus from 1596 to 1603 and then after 1819 fewer and fewer parishes submitted statistics. To collect statistics, each parish would usually hire two elderly and poor women, typically a lady receiving parish aid, and they were often ex-parish nurses or midwives. These women were called searchers and they were licensed by the Bishop of London. They were to view each body and report the cause of death as well as any physiological signs on a body to their parish clerk, and the clerk then submitted these data to the London Parish Clerk's Company [40]. Many were critical of this system, charging that searchers took bribes to ignore physiological symptoms and sometimes did not even view a body. They then submitted a condition other than syphilis

[40]. Also, searchers had no real authority, and those with power and money could refuse searchers access to a body [40]. Reported deaths from syphilis in these bills of mortality were typically confined to the poor or those without any family to protect them [40], resulting in underreporting like later official documents.

John Marshall in 1837 argued that the data collected by searchers were accurate. In his review of bills of mortality from London between 1629 and 1831, however, he failed to cite one case of syphilis. The closest he came to possibly acknowledging the existence of syphilis was that “No rational motive is discoverable for misrepresentation, except in some few cases, perhaps, of a desire on the part of the friends of the deceased to conceal the fact, when the death may have been occasioned or accelerated by venery [sexual indulgence], or indulgence in some vicious practice; but such cases, supposing them to occur at all, will of late years at all events, have been too few to affect the general interest of the Display here within” [41]. Besides syphilis, Marshall’s attention to detail is difficult to criticize in that during this long period he reports nearly every known cause of death even very rare conditions, such as three individuals who died from being “licked by dogs” [41]. *Capnocytophaga canimorsus* is a commensal bacterium found in the saliva of dogs and cats. In rare cases, humans, especially alcoholics and those with a compromised immune system, can be infected with this bacterium through a bite, scratch, or other contact, such as licking, after which they can rapidly develop septicemia. Even when treated with antibiotics there is a 30% mortality rate [42]. Later, John Angus of the General Register Office reviewed all bills of mortality for London from 1841 to 1853 and presented his findings to the Statistical Society of London in 1854. He also fails to mention any deaths from syphilis [43]. This lack of reporting may arise for an additional reason. In the bill of mortality from 1775 cited by Cox, the 71 individuals were listed as dying from the French pox [1], suggesting a certain amount of national pride was associated with a low prevalence of syphilis in England. Thus, while the searchers were consistently criticized as being unreliable and easily bribed, it is also possible that parish clerks, after receiving data from searchers, or those in the London Parish Clerk’s Company, after receiving it from parish clerks, may have re-assigned a cause of death while those individuals who analyzed bills of mortality ignored reported cases syphilis all because syphilis was considered too embarrassing to national pride.

## 7. Difficulties Interpreting Skeletal Lesions

If official documentation cannot be relied upon at this time, one would think that skeletons exhibiting syphilitic lesions would be a more accurate means of estimating a rough prevalence of syphilis within a population. Nevertheless, the review of the lesions on Leschallas’ cranium allow for the possibility that some cases in this population were

misdiagnosed for a number of reasons. Of the two cases of syphilis reported by Cox, the first “was a 51 year old male with lesions on the frontal area of the skull, the vertebrae, ribs and clavicle,” and the second was “a male of unknown age, had multiple lesions on the skull (*caries sica*), many of which had destroyed both the inner and outer tables of the cranial vault” as well as “the femora, left humerus and radius, and right ulna. There were no cases of congenital syphilis in this sample and no women were affected” [1]. These two cases cited by Cox exhibit extensive lesions, allowing for the possibility that skeletons that exhibited only a few osseous lesions, like Lechallas’s skeleton, were overlooked, which considering the main point of Cox et al.’s paper was that if you are not looking for a specific skeletal trauma or lesion, they can be easy to miss [2]. This is especially so when studying a population of skeletons like those from Christ Church, which “had considerable post-mortem damage due to the collapse of stacked coffins as well as acid degradation from lead coffins” [2]. Additionally, Cox noted that the best skeletal preservation was found among infants because their bones contained high levels of collagen, and the rate of preservation decreased with age regardless of sex. Female skeletons over the age of 50, however, were better preserved than male skeletons [1]. Thus, based on the data above, adult males appear to have had the highest rate of syphilis and their skeletons had the poorest preservation. Under these conditions small syphilitic lesions could easily be mistaken for post-mortem damage and degradation, especially when evaluating such a large population of skeletons. Furthermore, this population of nearly 1000 skeletons appears to have been studied in a relatively short period because they were removed between 1984 and 1989 and Cox et al.’s study of Leschallas’ cranium was published in 1990 [2].

Another factor is that before an effective treatment for syphilis existed reported estimates of the percentage of individuals infected with syphilis that developed osseous lesions varied from 1% to 20% [12]. This suggests that either a larger number of the individuals interred in Christ Church were infected with syphilis but did not develop osseous lesions or this skeletal population does not constitute a representational sample of the London population during this period or both factors could be skewing the data. Finally, since the rates of syphilis appear to vary widely for adult males, adult females, and children during this period, a more accurate method to estimate a prevalence would be to calculate estimates separately for each group. Curiously, neither study states the number of males and females or adults and children [1-2]. All factors must be considered when attempting to estimate the prevalence of syphilis in any archaeological population.

## 8. Conclusion

The combination of documentary evidence with skeletal analysis can reveal much about the prevalence of a condition from past times. Nevertheless, this combination of data is most accurate when the skeletal population constitutes a representative sample of the living population and is studied

within an adequate period by specialists trained in paleopathology and forensic science because a number of factors can skew an interpretation. For a condition like syphilis a researcher must be aware that a significant percentage of those suffering from this condition will not develop osseous lesions while an even larger percentage may only develop a few lesions, which in a population with significant post-mortem damage may not be correctly diagnosed or lesions may have been destroyed. Furthermore, based on what documentary evidence exists for this period, adult males had significantly higher rates of syphilis than adult females and children, but adult males had the poorest preservation, and the published data on this population failed to state the number of adult males, adult females, and children, both of which can further skew a researcher's interpretation. Finally, few bioarchaeologists or paleopathologists have been trained to recognize gunshot wounds while few forensic specialists have been trained to diagnose osseous lesions. Additionally, care must be taken to ensure that the documentary evidence accurately states cause of death. Even when the skeletal and documentary data are fragmentary both together can still be valuable tools in attempting to estimate the prevalence of a condition from the period they represent. However, a basic assumption of most scholars is that those who acquired medical data from this period, like searchers for bills of mortality or doctors for death certificates, were accurately listing cause of death, but as discussed above, this is simply not always the case. It appears that searchers, coroners, and doctors rarely if ever listed syphilis as a cause of death, and when it is listed, it is a condition confined to the poorest of the population. A similar stigma appears to be associated as late as the early 20th century with cancer in both England and France. Additionally, the evidence discussed above suggests that the stigma of syphilis or cancer was so great at the time of Leschallas' suicide, even with £95,000 in the balance, instead of listing either condition as a cause of insanity for which there was no apparent disagreement in the medical community, the coroner stated that involuntal melancholia was the cause of his temporary insanity. Considering that involuntal melancholia was little more than a label to cover a hodgepodge of symptoms, it could be more successfully challenged by the government, which may explain the rushed internment. Thus, a better understanding of stigmata in past societies and how they change over time can be a valuable tool to better understanding the validity of some documentary evidence and more accurately estimating the prevalence of a disease.

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