



SAPIENZA
UNIVERSITÀ DI ROMA



© Author(s)
E-ISSN 2531-7288
ISSN 0394/9001



Pain & Sensibility

The Management of Pain “Au Tournant Des Lumières”

Germana Pareti

Università di Torino - Dipartimento di Filosofia e Scienze
dell'Educazione, Torino, I

MEDICINA NEI SECOLI

Journal of History of Medicine
and Medical Humanities

37/2 (2025) 5-26

Revised: 07.10.2024

Accepted: 05.12.2024

DOI: 10.13133/2531-7288/3159

Corresponding author:
germana.pareti@unito.it

ABSTRACT

Throughout the history of medicine and philosophy, the definition of “pain” has fluctuated, encompassing both its physical and psycho-sensory dimensions. Generally, in the past, physicians concentrated their interest on the physiological mechanisms of pain, while philosophers, emphasizing its emotional elements, focused on its phenomenological and behavioral expressions. Between the 18th and 19th centuries, in the effort to clarify the inner biological processes leading to or sustaining pain, physiologists and philosophers began to address pain from diverse perspective – sometimes distinguishing between “irritability” (organ or tissue irritability, the then surprising seemingly inherent response to externally delivered stimuli) and “sensitivity”; other times introducing the philosophical moral transposition of “sympathy” in the role of *mutual* sympathy. During the Enlightenment, some medical scholars, while studying the physical aspects of pain, also displayed empathy and sought ways to mitigate painful experiences, including therapeutic approaches. The debate around the guillotine and battlefield amputations highlights this emerging awareness. Notably, in France, the *Médecine du coeur* (signifying not cardiology, but benevolence in the practice of medicine) began to spread, while some Scottish surgeons, influenced by Adam Smith’s moral theory, emphasized the need for an empathetic approach to patient care.

Keywords: Sensitivity - Sympathy - *Douleur* - Amputation - Lithotomy

The pain between perception and feeling

Throughout the history of medicine, pain has been approached in a conflictual way by philosophers and scientists. The idea proposed by philosophers was that pain was a passion, to be given meaning, while medical doctors and scientists tried above all to explain it by resorting to anatomy and physiology, in order to find methods and therapies for its treatment. This thesis is supported both by algologists, such as John Bonica, one of the founders of modern algological studies, and by historians, who over the last thirty years delved in the intricacies of “pain”¹. Today, however, the renewed *International Association for the Study of Pain* (IASP) definition, according to which pain is “an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage”, reached a still incomplete but shareable definition, thus conflating the manifold sensory-perceptual and the emotional sides of pain. In this essay, we aim to revisit a historical event that highlights how, even in earlier times, some physicians, and particularly surgeons, treated pain with attention to both its physiological and emotional aspects. Specifically, during the late 18th century, Scottish and English medical doctors and surgeons began addressing pain treatment by considering its moral and emotional components. Despite the fact that the era of analgesia was yet to come, they sought to make their interventions and therapies as painless as possible.

Even earlier, in the *Encyclopédie*, the entry on “douleur” described both the “unpleasant sensations of the body” experienced in both *internal* and *external* body parts, and the “pains of the mind or heart”. This distinction between internal and external pain was based on Sydenham’s concept of the “inner man”, which also influenced Cabanis. According to Cabanis, there were three types of sensitivity: that of the sense organs, that of the internal parts, and that of the brain, where both external and internal sensations were processed². The Encyclopedists suggested that the unpleasant experience of pain was due to injury to a sensory organ that extends throughout the body, with certain areas being more sensitive due to having higher concentrations of nerves. They recognized the role of the brain in pain perception and even acknowledged the phenomenon of phantom limb pain, indicating the presence of a *sensorium commune* that could be affected. Furthermore, they classified pain into four distinct types: tension-type, burdensome, throbbing, and stinging pain, and cross-referenced various forms of pain such as headaches, kidney pain, and rheumatic pain. The most intense pain was thought to be felt by individuals with highly sensitive nerves, such as children and women, who were more prone to hysterical episodes. It was noted that substances irritating to the nerves should be avoided. This was crucial, especially in light of Albert Haller’s (1775) distinction between nervous sensitivity and irritability, the latter referring to the muscles’ ability to contract when stimulated. Henri Fouquet, from the Faculty of Medicine in Montpellier, cited Auguste Tissot’s recognition of Haller, whose work Tissot had translated from Latin to French. Fouquet also noted that the

study of these concepts predated Haller's work, going back to the English anatomist Francis Glisson, an opponent of Cartesian philosophy. Haller's separation between sensitivity and irritability was debated by Edinburgh scholar Robert Whytt³, who argued, through experiments, that irritability was dependent on sensitivity. Whytt also emphasized the importance of nerve *sympathy*, not only "between different parts of the body" but also "between the nervous systems of different individuals", especially in nervous disorders. He suggested that irritable fibers could demonstrate a form of sympathy "outside the control of the brain", although the brain remained the primary seat of this function⁴.

The debate between Haller and Whytt highlighted the complex nature of pain. Under scrutiny was precisely the concept of sympathy, according to which an injury in one organ or part of the body could cause pain in a different or even distant area, since the site of the perceived pain (nowadays known as "referred pain") was not regarded as the source of the painful sensation. This idea was previously dismissed by Paracelsians and iatrochemists, as it implied an obscure connection or hidden correspondence between body parts, beyond rational understanding. Nevertheless, examples of sympathy between organs, such as a stomachache occurring alongside a headache or dysfunction in one kidney affecting the other, made the concept periodically resurface in medicine. Moreover, the idea that muscle fibers could remain irritable after death had serious moral implications, which quickly became evident in French medical discussions. The notion that muscles might still be sensitive after death challenged the foundational principles behind the guillotine, which, during the French Revolution, was intended as a humane instrument of execution. Article 6 of the proposed reform of the penal code, presented by Joseph-Ignace Guillotin to the National Constituent Assembly on December 1, 1789, stated that for capital punishment, "the execution shall be the same... the criminal shall be decapitated by a simple machine"⁵. Considered a *bienfacteur de l'humanité*⁶, Guillotin, along with Robespierre, Marat, and others, aimed to use a "humane machine" that would minimize pain and reduce the spectacle of public executions: "the head flies, the blood spurts, the person is no more", all happening "in the blink of an eye" with minimal pain. However, the report that Charlotte Corday's decapitated head appeared red with indignation after being slapped by the executioner (a moment that also drew a reaction from the crowd) raised questions about whether consciousness might linger after decapitation, suggesting that the head might still "think" for a brief time.

Following a letter by Samuel Thomas Sömmerring, published in "Le Moniteur" in 1795 and addressed to his friend Konrad Engelbert Oelsner, in which he argued that the guillotine inflicted "a horrible form of death" because "feeling, personality, and self" could survive for a short time after execution, a significant debate ensued⁷. This controversy, featured in the "Magasin Encyclopédique", involved leading doctors, philosophers, and scientists, including Dr. Jean-Joseph Sue and Cabanis. Sue, who

had conducted experiments on vitality, questioned whether pain could indeed persist after decapitation (*décollation*)⁸. He proposed that there are two types of sensitivity: one experienced “in the place that is the site of the suffering” (“dans le lieu même où l’on souffre”) and the other being “the awareness or perception of this sensation”. An example of the latter can be seen in a gout attack, where the pain may not be in the head, but the head perceives the pain through “correlation” and thus has the “awareness of the pain”⁹.

This was not about muscles, bones, or cartilage. In many cases of guillotined individuals, the severing of these parts was often imperfect, but the most agonizing pain for the condemned came from the “awareness of their execution and the lingering thought of their suffering”. Based on experiments conducted in French and Edinburgh schools and hospitals, Sue became convinced that limbs detached from the body continued to experience pain, and that the head, more than any other part, intensely felt the stimuli it was exposed to. He noted movements of the eyelids, eyes, lips, and jaws when the executioner held the severed head aloft. Sue even proposed a hypothetical experiment, to be conducted “for the sake of humanity”, where the condemned would agree to perform a series of movements (such as blinking or jaw movements) after decapitation to prove their awareness of their situation. He mentioned several victims of the Terror – Bailly, Malesherbes, and Lavoisier – who might have willingly participated in this experiment. For Sue, the self was not confined to the brain, but extended to the ganglia and plexuses, meaning each part of the body possessed its own sensitivity, contributing to its overall well-being. Because of this, he considered asphyxiation to be the gentlest form of death, as it ensured the “abnegation of the self”. In contrast to Sue’s vitalism, which invoked the animal, moral, and intellectual soul, Cabanis argued that these ideas were entirely irrelevant to the issue. Clearly, sensations are tied to pleasure and pain, and animal life cannot exist without these two essential elements of sensitivity¹⁰. Pain and illness represent the most adverse conditions for living beings: one foreshadows, and the other confirms the threat of destruction. Cabanis was acutely aware of the strong connection between a person’s moral and physical states, which was especially evident in the perception of pain. Some individuals are extremely sensitive, paying close attention to their internal, visceral sensations. However, sensitivity can be compared to a fluid that flows into one channel at the expense of another. For this reason, there are individuals, like the *Convulsionnaires* of St.-Médard, who seem immune to the pain of sword or axe blows, or those who appear to benefit from mesmerist treatments.

Returning to the issue of the guillotine, Cabanis argued that, unlike Oelsner and Sömmerring, Dr. Sue was correct in observing that sensations and pain are not confined to a central *sensorium*, but are spread throughout the body. However, Sue did not differentiate between motor forces, movements, and sensory forces: as shown in animal experiments, movements can still occur even when sensations are abolished, but the frog whose leg is irritated has no awareness of the pain. With this argu-

ment, Cabanis demonstrated that, while not adhering to Haller's doctrine of irritability versus sensitivity with absolute strictness ("dans toute sa rigueur"), he nonetheless accepted it and agreed with Whytt that "nervous sympathies" require communication between different parts of the nervous system through the brain and spinal cord. Moreover, the massive hemorrhage caused by decapitation meant that the brain lacked the blood required to perform its functions. He trusted the revolutionary guillotine models, designed to sever heads with the "speed of a glance", ensuring that the bones were cut cleanly. Consequently, even though a decapitated man could never report whether he felt pain, "a guillotined man does not suffer, neither in his limbs nor his head", and his death is as swift as "the blow that strikes him"¹¹. Even if the limbs appear to move convulsively, there is no longer pain or sensation, just a residual vital force. Despite this, Cabanis advocated for abolishing the guillotine for other reasons: the republic should eliminate all symbols of tyranny, including the guillotine, which was the "instrument of a punishment" that he considered "a great social crime".

In 18th-century French medicine, the debate surrounding the guillotine marked the culmination of an approach grounded in the *sentiment de bienfaisance* (feeling of benevolence). Focused primarily on sensitivity, the so-called *médecine du cœur* viewed pain as "the first feeling that makes us aware of life", but also as "the nameless tyrant", "the enemy of human happiness", and the cause of "tears or disturbances that disrupt the body's harmony"¹². Marc-Antoine Petit's *Médecine du cœur* (1806) served as a model for generations of doctors¹³. In a work written as a poem, Petit drew on his experience at the Hôtel-Dieu de Lyon, aiming to teach the art of "being good in form"¹⁴. The art of healing, according to Petit, was not just about following medical precepts but also about using the mind and heart to foster a more direct connection between doctor and patient. A physician should have a gentle touch and be skilled in minimizing pain. Petit had a deep understanding of the patient's suffering – "man, along with life, has received pain"¹⁵ – and their "horror of iron" in the face of surgery. But he also recognized the doctor's dilemma, knowing that "life or death depends on a single movement". Petit made a distinction between compassion and humanity: the former, he argued, is like a physical response to pain, driven to alleviate it, while the latter is a virtue, a divine sentiment. He also offered practical advice: a doctor should not raise his voice, as the sufferer's sensitivity is heightened, and should avoid abrupt movements while not appearing overly eager. Based on his experience, he noted the selfishness that pain brings, amplifying the "human ego", and also remarked on the frequently exaggerated vocabulary patients use to describe their suffering, with words like "frightful", "horrible", and "terrifying".

In 1798, pain was the central focus of Petit's inaugural lecture on Anatomy and Surgery at the Hôtel-Dieu¹⁶. Describing pain as a relentless enemy of humanity, Petit noted that it affects everyone, regardless of age, social status, or talent. He traced its causes to both the heightened sensitivity at the nerve endings and the irritation of

muscles in various parts of the body. Many of these sources lie deep within the organs and accumulate over time. In solid tissues, they lead to tensions, spasms, ruptures, and constrictions, while in fluids, they result in blockages, obstructions, misplaced humors, dryness, or moisture. The head, as the primary organ of sensation, is often the most common site of pain, and it is not unusual for one type of pain to trigger another through sympathy. This phenomenon is attributed to the interconnectedness of vessels and nerves, the continuity of cellular tissues, and the similar organization of different parts of the body. Thus, that concept of sympathy, which had been of great interest to Whytt and many other scholars in the mid-18th century, came to new life.

Cabanis also addressed this idea in his *Rapports*, distinguishing between idiopathic pain, originating from the nervous system itself, and sympathetic pain, associated with organs that have more extensive nerve connections. This latter type of pain was often referred to by the ambiguous term “spasm”, which described sharp pains caused by a temporary nerve disturbance in certain parts of the body¹⁷. Petit also connected the most severe headaches to imbalances in the stomach’s fluids, congestion in the spleen or liver, or obstructions in the gallbladder. Specific sympathetic pains were linked to corresponding areas of the head, with pain in the occiput and crown often associated with uterine dysfunctions. However, Petit emphasized that an irritative cause alone was insufficient to produce pain. Irritation only creates the conditions for pain. But for pain to be felt, the action occurring in the nerve fibers must be transmitted to the spinal cord and a comparative judgment must take place between the present and past states¹⁸.

A “healing” pain? The case of amputations

The renowned doctrine of sympathy could have been profitable for understanding pain from two perspectives: first, from a “neurophysiological” view, according to which pain is transmitted through a network of nerve branches; and second, from the perspective of the vitalists and humoralists of the Montpellier school, who believed painful perception arose from a sensitivity distributed throughout the body via membranes and humors, rather than merely through “sympathie de nerfs”. In the latter case, from a humoralistic standpoint, sympathy was equated with metastasis, meaning the transfer of morbid material from one part of the body to another¹⁹. Théophile Bordeu, for example, observed that pain or suppuration in one side of the chest could manifest in the cheek, wrist, and leg on the same side. This view revived ancient medical teachings, which held that pain in both clavicles also affected the upper lungs, with a similar correspondence for the middle and lower lung regions. For Bordeu, however, this transmission occurred through the layers of the cellular tissue²⁰, which transferred humors in a branching pattern from, for instance, the cellular tissue “pockets” (*poches*) of the chest in a morbid “chain of compressions” from the inside to the outside²¹. It was widely acknowledged among clinicians that there is sympathy between the stomach, liver, and spleen, and between the stomach and heart, with the

heart especially responsive to changes in the epigastrium. Similarly remarkable is the sympathy between each breast and the corresponding side of the uterus, based on an axial division of the body into two halves. Paul-Joseph Barthez highlighted this peculiar sympathy in his *Nouveaux Éléments*, noting that the breasts and uterus shared the same humors, leading to the concurrence of their secretions and the “singular sympathy” between these organs. Ultimately, sympathies between two organs, expressed through the correspondence of their affections, followed a kind of “pre-established harmony”. Their study formed a central part of physiology, as sympathies were crucial to sustaining life. These connections were not driven by mechanical causes, but rather by the motor and sensory forces of the Vital Principle²². Acting throughout the body, these forces established a universal connection that unified the living organism. Like many physicians of his time, Barthez thoroughly examined the relationship between sensitivity and irritability. The mechanism of sympathy allowed to explain also the movements that occurred in parts of the body other than those directly irritated, as in the case of a sympathetic contraction of an organ not directly subjected to any irritant. Additionally, he noted that sensitive forces influence motor forces even in body parts that remain alive despite being severed from communication with other parts, as seen in decapitated individuals. For Barthez, this represented a kind of instinct that persists after the soul (*âme pensante*) has ceased to function. Thanks to these convictions, he also contributed to the ongoing debate about whether decapitated individuals experience pain. In his view, a person could not feel pain after execution, since decapitation severs the connection with the soul, ending conscious sensations. However, the severed body parts might retain a “blind perception” (*perception aveugle*) of the injury²³. The exploration of sympathy’s power also gave rise to another question: when faced with pain, should a remedy be applied that was *analogous* to the cause of the suffering? Or was it preferable for the remedy to be its *opposite*? Should it stimulate or relax? These issues had arisen in the context of the opium debate, which raised the question of whether it acted as a sedative or a stimulant, given its efficacy across a variety of conditions. Friedrich Hoffmann, who studied *De Opiatorio Mechanica operandi*, concluded that opiates slowed blood circulation by halting vital movements in the arteries²⁴. Whytt, on the other hand, believed opium worked by reducing the irritability of the heart. Barthez argued that opium could either stimulate or dull the sensitivity of organs depending on the circumstances. For John Brown, who made excitability a core principle of life, opium was the most powerful stimulant, even surpassing camphor and ether. It reduced irritation and was recommended for conditions like hysteria, gout, epilepsy, and deep wounds²⁵. This exchange of ideas led to a further question that involved the concept of “pain”: could pain itself be a remedy for healing? Incisions in abscesses, while painful, were necessary for healing, as were amputations for gangrene, reductions for dislocations, and excisions for cyst removal. Cabanis believed that pain helped “fortify the entire body”, giving strength, balance, and stability to the nervous-

muscular system²⁶. However, a proportional reaction must follow, so that nature can respond with all its energy. The same occurs with the *malheur morale*, which increases the strength of the soul, unless it completely overwhelms it.

In his 1818 book on *vésicatoires*, Henri Fouquet, drawing on Hippocrates, argued that pain can be relieved by its own cause, as severe liver pain can be alleviated by the onset of fever²⁷. The *vésicatoires* were not merely plasters, but irritants, caustics, stimulants, and pungent (*âcres*) substances applied to the surface or cavities of the body to induce redness, swelling, sores, blisters, itching, and more. Known for their “vertu brûlante ou ignée”, they were also referred to as *pyrentia* or *urentia*. Petit shared this perspective, listing various remedies that destroy pain by causing an even more intense pain on the skin or through the sensory organs. Thus, pain itself was seen as a therapeutic tool, providing new strength to the vital principle²⁸.

But if pain had these healing properties, what could be said about the most excruciating pains, such as those caused by kidney stones, to which Hoffmann had devoted much of his *Medicina Rationalis*? And what about amputations, a subject that had sparked significant debate among surgeons internationally? Swiss surgeon Johann Ulrich Bilguer, one of the surgeon-generals in the Prussian Army under Frederick the Great, raised this issue during the Seven Years’ War, writing a memorandum over the winter of 1760-1761. In his *Dissertatio*, translated into English by Samuel Auguste Tissot in 1764 and into French in 1773, Bilguer argued against many of the amputations he observed being performed by “barely trained craftsmen-surgeons”²⁹. He added a note clarifying that “it was rumored in Paris during the war that the King of Prussia forbade the mutilation of his soldiers for reasons other than humanity”³⁰. Bilguer’s writing sought two goals: to restore the truth and to inspire greater humanity in surgeons. He observed that amputations, deemed necessary by army surgeons, by physicians, and even the wounded themselves, rarely achieved their desired outcome. He also treated patients whose limbs had been shattered by cannonballs without resorting to such extreme measures. Bilguer’s goal was “to mutilate the wounded as little as possible”, recognizing that “most people are horrified at the mere mention of amputation”. It was not a matter of lack of courage or faint-heartedness in hearing the patient’s cries. Bilguer put himself in the patient’s shoes, who, for moral reasons, religion, and desire for life, considered the pain “as nothing” when it assured him the hope of preserving life. According to Bilguer, amputation was necessary in cases of mortification, severe lacerations, extensive wounds, and cancer. He described a technique for making crosswise incisions on the muscle to remove gangrenous or mortified tissue and bone fragments while preserving blood vessels as much as possible. His method avoided excessive force and incisions “attended with blood”. He also detailed the application of bandages, dressings, liniments, and balsams to the bones and soft tissue to halt the spread of mortification and “separate the dead parts from the found”³¹.

Bilguer believed that gangrene could result either from an internal morbid cause or an external injury. In the first scenario, the morbid cause should be addressed by removing only what is “absolutely mortified”; in the second, the external injury should be treated appropriately. However, if gangrene spread and the patient was in poor condition, suffering from fever and inflammation, Bilguer argued that amputation was “no remedy at all”. In such cases, the patient’s weakened state made them too frail to survive the operation, and performing an amputation would only cause unnecessary pain and hasten death. Bilguer did not shy away from describing certain cases as “astonishing”, expressing outrage at the stubbornness and cruelty of surgeons. He called it a “piece of cruelty” that he could not “in any shape approve”³². At the time, medical manuals on gunshot wounds (*plaies d’armes à feu*) acknowledged that amputations were performed frequently, especially in the French armies, more so than in other countries. This practice was driven by a harsh and inhumane policy, and Bilguer’s dissertation caused such controversy in France that it prompted Lamartinière to issue a response in a *Mémoire de l’Académie Royale de Chirurgie*. Some distinguished French Academics even made sarcastic remarks, suggesting Bilguer developed his doctrine to please Frederick the Great of Prussia – “roi d’un pays pauvre” (king of a poor country) – who wanted to limit the number of disabled soldiers relying on the state. Germain Pichault Lamartinière, or De la Martinière, who had been “the soul of the Académie Royale de Chirurgie” for 36 years³³, strongly defended the practice of amputation. For him, amputation was not an abuse; it was, in fact, a vital service provided by surgery according to the *principe d’humanité*. He criticized the translator Tissot, who had altered the title of Bilguer’s work by replacing “abuse” with “uselessness” and highlighted the horrors of amputation. Tissot had called on surgeons to abandon this “cruelle et meurtrière méthode” (cruel and murderous method) and to “feel humanity”. In contrast, Lamartinière saw amputation as a life-saving intervention that had preserved the lives of many wounded soldiers, and he had personally refined the technique starting from the war of 1733. He found particularly objectionable the practice of immediate amputation (*sur-le-champ*), though Bilguer noted that when a limb was completely severed by a cannonball, no second operation was needed. However, Lamartinière argued that it was necessary to transform a simple wound (*plaie simple*) into a clean, regular surface in cases of contused, damaged, or lacerated wounds. Battlefield amputations became essential when there was a threat of imminent gangrene or severe suppuration, and they were considered preferable to prolonged, painful treatments that could drag on for months, often resulting in fistulas, physical deterioration, and false hopes. This issue had been addressed long before by the Académie Royale de Chirurgie in 1754, when it posed the question: “In what cases should amputation be performed immediately on the battlefield, and in what cases should it be delayed?” In the prize-winning *Mémoire*, the debate was not about whether or not to amputate, but rather whether the procedure should be done immediately or after a few hours. Tissot had

interpreted the dissertation as advocating for delayed amputations, but according to Lamartinière, this was incorrect. He argued that even when attempts were made to save the limb, the patient often ended up requiring amputation after days of suffering. It was time to put an end to the vague or even offensive statements made against the Académie. Lamartinière then outlined his method of amputation, based on the *Lumières de l'Anatomie*. He believed that an experienced surgeon should act promptly after the injury, inserting his hands into the wound and tracing the path of the cannonball to *débrider* (debride) the tissues. This involved resecting the bone and flesh as high up from the wound as possible.

The debate in France remained contentious, as the success rate of amputations performed *sur le champ* was low, with only about one-third surviving. However, this did not mean that delayed amputations had a better survival rate. A major contribution came in 1782 from Edward Alanson, a surgeon at the Liverpool Infirmary, who, after observing numerous amputations, became convinced that “too little skin is saved” during the procedure³⁴. He had seen many cases where insufficient attention was given to preserving an adequate amount of skin. Typically, the muscles were cut with a perpendicular circular incision, “no union [was] attempted by the first intention”, the parts were dressed “with dry lint”, the bone was left exposed, and arteries, nerves, and veins were all tied together. This resulted in spasms, fever, hemorrhages, discharge of matter, muscle retraction, and exfoliation of bone. For Alanson, losing a limb to save a life was among the most tragic of human misfortunes. He referenced an eminent writer who described amputation as “an operation terrible to endure, horrifying to witness, and leaving the patient in a mutilated, imperfect state”³⁵. This condition worsened when the operation followed a poorly devised plan, which compromised the chances of recovery and made the process even more painful and drawn out. Alanson’s goal, therefore, was to improve both the surgical technique and post-operative care, particularly for army and navy surgeons. Of the 46 amputations he had witnessed, 10 patients died following the old procedure, but none of the 35 patients treated with his new technique had died, and their recovery was much smoother. Alanson’s technique differed mainly in how the tape was applied and in the amount of skin saved, thanks to the immediate union of the wound edges by apposition. These measures were intended to reduce pain, which he saw as a severe symptom to be prevented or minimized whenever possible.

In England – though not in France – Alanson’s ideas gained wide dissemination and acceptance, aided in part by the surgery manual of Scottish surgeon Benjamin Bell. England, and particularly Scotland, became fertile ground for a form of surgery guided by the ideals of humanity and compassion in the treatment of pain. This new moral approach took hold, thanks in part to contributions in medicine and surgery by another Bell, John, the brother of Charles Bell, who is renowned in physiology and neurology for discovering the distinction between motor and sensory nerves in the spinal cord. Following the Battle of Waterloo, Charles Bell, who was both an artist and a physician,

gained not only professional but also deeply human experience while working in the hospitals of Brussels and Antwerp. There, he treated thousands of wounded soldiers, whom he later immortalized in sketches and watercolors. His brother-in-law, surgeon John Shaw, documented Bell's letters recounting this experience. The humanity and emotional sensitivity – rather than detachment – displayed by surgeons in the face of suffering has been explored in various studies by historian Michael Brown, who delved into the “cultures” of what is known as *Romantic surgery*. A central figure in this renewal of surgical practice was John Bell, mentioned earlier³⁶. His *Discourses on the Nature and Cure of Wounds* (1795) is now regarded as a work that vividly reflects the growing sensitivity of surgeons toward their patients. The interaction between surgeon and patient is shaped by the surgeon's immediate anxiety upon seeing the wounded, driven by the need to understand the nature of the injury, and by the patient's “awful suspense” as they interpret the surgeon's facial expressions as a verdict of life or death³⁷. In his *Discourses*, Bell introduced his doctrine of adhesion and techniques for stopping the flow of blood, starting with the question: “What is amputation but a wound”³⁸? This topic had sparked endless debate within the French Academy. Bell was well aware of the contrasting views of Henri-François Le Dran, who argued that “the sooner it is done, the better” when it came to amputation, and Bilguer, who questioned the wisdom of “adding a wound to a wound”. Bell, however, observed that “limbs, which in happier circumstances might have been preserved, must often, in a fleeing army or dangerous camp, be cut off”. As campaigns dragged on, chaos and suffering increased, with hospitals overcrowded and the wounded subjected to prolonged pain³⁹. Bell pointed out that amputations performed in 1745 were not the same as those of 1795. Earlier, surgeons had cut directly through the bone without making a double incision, leaving patients to endure five or six months of suffering without proper treatment. In Bell's view, amputation should never be performed in the presence of fever, pain, convulsions, or severe swelling, as removing the limb did not remove the disease itself.

Many of Bell's students, to whom these *Discourses* were addressed, later served in the Army and Navy medical departments. Though Bell himself was not a military surgeon, he adopted the mindset of those operating on battlefields, recognizing the importance of a surgeon's reassuring demeanor toward the wounded⁴⁰. He also understood the negative effects that fear and anxiety could have on patients. Thus, Bell's teachings marked the dawn of a new era in surgery at the turn of the century.

Pity and compassion

There is a particularly notable example illustrating what amputations were like at the end of the 18th century. The famous satirical print “Amputation” (1793) by English caricaturist Thomas Rowlandson vividly portrays a leg amputation below the knee, performed without anesthesia. In this image, the unfortunate patient screams in agony as he is held down by assistants, while the surgeon, depicted as a true “saw-

bones”, kneels on the leg, sawing through the bone. Another surgeon nearby holds a knife, having just severed the flesh and muscles. Surrounding them is a group of physicians, watching with a detached and indifferent demeanor. Other invasive and excruciatingly painful operations of the time included mastectomy and lithotomy⁴¹. Despite the absence of methods for pain control, blood loss management, and infection prevention, many radical surgeries were performed, often in the unexplored territories of the body’s three main cavities – abdomen, thorax, and cranium⁴². However, by the late 18th century, a new mindset began to take root within English-speaking surgical communities. This shift was marked by emotions of compassion, pity, and sympathy for patients. John Bell was one such surgeon who embodied this change, though he became an unlikely central figure in a dispute at the University of Edinburgh. The issue stemmed from a Royal Charter granted in 1736 by King George II, which bestowed royal patronage on the Edinburgh Infirmary and established the legal framework governing its operations⁴³. According to the Charter, the patients were to be “cared for by the Royal College of Physicians and some of the most skillful surgeons”. The specification of “skillful surgeons” implied that *not all* surgeons – especially younger, less experienced ones – were suited for such work. This period was a turning point for Scottish surgery, as surgeons, who had historically been barbers, sought professional recognition alongside physicians⁴⁴. Their demands intensified during the late 18th and early 19th century, particularly during the war with France. John Bell, widely regarded as “the only true surgeon of Edinburgh”, emerged as the spokesperson for these demands. He found himself in conflict with James Gregory, a prominent physician and teacher at the Infirmary. Gregory had expressed concern in a memorial that the Infirmary was being staffed by “the youngest and most inexperienced surgeons”⁴⁵. Gregory’s words appear to convey a sincere concern for patient welfare, appealing to virtues like benevolence, brotherly love, and charity, which he saw as alternatives to unnecessary suffering. At the same time, he humorously compared the surplus of physicians and surgeons to an excess of corn and cattle, remarking that if there were too many, they became useless to society. Ironically, Gregory’s critique alluded to the economic theory of Adam Smith, who, coincidentally, a few decades early had been architect of the role of sympathy and goodwill in moral philosophy – a philosophy that John Bell sought to embody in his approach to patient care.

Was Gregory also a sincere representative of that movement which professed the value of those moral sentiments? Or was he merely a shrewd manipulator? In his *Memorial*, he subtly admitted, “I am never present at any operation in private practice unless specifically requested by the patient”, and further mentioned that he had “very seldom” witnessed operations, only attending “one day” at a public procedure in the Theatre⁴⁶. Furthermore, in an *Additional Memorial*, Gregory expressed his revulsion, admitting that he “neither liked the sight nor the smell of a decaying, mutilated human body”⁴⁷.

John Bell's humanitarian response was swift and unfolded in two distinct phases: the first in his *Answer* of 1800, followed by the vehement *Letters on Professional Character and Manners* in 1810, in which he reflected on the earlier decade-long conflict with Gregory. These *Letters* reveal that the debate over the dignity of the surgeon versus the physician had escalated into a personal feud – a true “medical war”, fought fiercely, which would ultimately have devastating consequences for Bell's professional career. Nevertheless, Bell's humanitarian ethos is evident in both the content and tone of these writings, demonstrating his compassion, benevolence, and empathy towards the patient and their suffering. In addressing the Managers of the Royal Infirmary of Edinburgh, Bell emphasized, “in your school, under your watchful eye, we have been trained in a profession that instills humane sentiments”. He argued that feelings of pity and compassion, once cultivated, “do not easily expire”⁴⁸. Bell further underscored the importance of the surgeon's manual labor, which Gregory had deemed inferior to the intellectual pursuits of a physician. He remarked, the physician maintains a certain distance from manual labor. In contrast, the surgeon is intimately tied to practice and craftsmanship, and is directly exposed to human suffering – “to the extremes of human pain, suffering, and endurance”⁴⁹. To bolster his argument, Bell invoked the teachings of Gregory's father, the esteemed Professor John Gregory, who had served as Professor of the Practice of Physic in Edinburgh. In his *Lectures on the Duties of a Physician*, Gregory senior noted that a surgeon is often compelled to confront “a certain, but painful and prolonged death; sometimes struggling with bodily pain, or the even fiercer torments of the mind”. He added: “We revere the suffering of our fellow beings, and the profession that brings them relief”⁵⁰. John Gregory championed the virtues of humanity and sympathy, as well as the confidence and affection physicians should offer their patients. He highlighted the importance of attentiveness to the fellow human beings – qualities conspicuously absent in his son, who showed a lack of charity, benevolence, and sensitivity. Providence had endowed the medical profession with “the virtues of a compassionate heart”, by giving physicians “a direct and daily involvement in the suffering of their fellow creatures”⁵¹. By contrast, Gregory the younger “never entered a surgical ward, nor witnessed an operation”⁵². Had he even once seen the prolonged suffering of a fellow human being, all his extravagant reflections would have been more easily forgiven.

Beyond the criticisms, accusations, and even insults Bell hurls at his adversary, and aside from the debate contrasting the roles of physician and surgeon, Bell's writings in his own defense clearly articulate his vision for the hospital profession and the advantages of close collaboration between the Royal Infirmary and the College of Surgeons. Surgeons, in particular, face daily the fears, anxieties, expectations, and suffering of their patients, especially those of the “poor sick in the hospital”. However, surgical care must meet expectations and offer the hope of some benefit. Young professionals entering the field should have instilled in them a deep sympathy for their patients' suf-

fering⁵³. Upon joining the profession, it is not just about mastering the principles of Chemistry and Anatomy; there must be a genuine interest in the nature of diseases and the well-being of patients. The physician, in turn, should serve as a friend and source of comfort to his fellow beings in their hours of “pain and anguish”⁵⁴. Hospitals must be places where charity, humanity, and philanthropy are as vital as medical practice. No individual should be left in distress, abandoned “upon a table, amidst hundreds of spectators, writhing under the pain of an operation”⁵⁵. Bell also stressed the importance of the surgical infirmary welcoming all patients, including those from the countryside and the Highlands, and especially the humble – “workmen and all the lower ranks of people”⁵⁶ – so they could receive treatment in the theatre and be restored to health and strength. Everyone should be accepted, and this openness would elevate the institution. At the same time, there must be vigilance against infections and gangrene, to which surgical patients are particularly vulnerable, to ensure that the infirmary does not become a breeding ground for “Hospital Gangrene”.

In discussing the surgeon’s practical experience (alongside his knowledge of Anatomy and Surgery from textbooks), Bell referenced the case of lithotomy, one of the surgeon’s most critical procedures. This is the operation of “cutting for the stone”, which causes extreme pain, fever, and agony. Initially, the operation was only performed on young boys, where the stone could be accessed with the fingers⁵⁷. However, in adults and the elderly, the procedure was considered too dangerous. In some cases, surgeons would cut only the urethra, leaving the bladder’s neck dilated but uncut. This procedure, which involved fearsome instruments such as the scoop – a kind of disturbing “spoon” among the tools of the so-called *Apparatus Major* – could last for a full hour, amidst the patient’s cries of anguish. Gangrene would often follow, making the patient’s death inevitable. In Paris, lithotomies were typically carried out in the spring and autumn, with the theatres of major hospitals like the Charité and Hôtel-Dieu drenched in blood. In the late 1600s, those who observed the “tragic operations” of Jacques of Beaufort (better known as Frère Jacques) were filled with horror at the roughness with which he plunged his dagger-shaped knife into the bladder. Yet, over time, his method of incision, as opposed to dilation, became the safest way to perform the surgery⁵⁸.

In addition to lithotomy and amputations, the major operations performed in hospitals included hernia repairs, tumor excisions, treatment of hydroceles, and trepanation. These procedures relied not just on experience but on a deep understanding of anatomy. Now that surgery had become a more significant area of study, “performing operations has become the particular responsibility of young surgeons”, who approach these procedures with humility and diligence. It is the teacher’s role, as both a scientist and an instructor of “impetuous youth”, to teach not only how to perform the operations but also how to “alleviate pain and suffering through sympathy, and relieve need with charity”. In conclusion, Bell believed that when an operation is prolonged, “every pain is doubled, and every danger increased”:

*The sufferer is tortured by every impertinent or curious assistant, and often is carried away, exhausted and dying, from under their hands*⁵⁹.

The patient often leaves the operating table exhausted, only to die shortly after. Bell himself had witnessed operations that dragged on for nearly an hour – procedures that “even a pretender” should have completed in seven minutes. The extended suffering, initially cruel, ultimately becomes fatal.

The philosophical turn

The principles of sympathy and benevolence that shaped John Bell’s doctrine were not novel concepts in 18th-century English and Scottish philosophy, as they had already been articulated by Enlightenment thinkers since the early part of the century. At the turn of the 17th and 18th centuries, Shaftesbury had described sympathy as a cosmic force. In both *The Moralists* and *Inquiry and Characteristics*, he viewed virtue as an “equal, just, and universal Friendship” with all people. For him, the highest good was a life characterized by “one continued Friendship” with humanity as a whole. Shaftesbury has been credited as “the first moralist who distinctly takes psychological experience as the basis of ethics”⁶⁰ because he explored natural affections such as tenderness, pity, gratitude, and kindness, noting that these emotions bring pleasure, which we reflect on and become conscious of. Sympathy was seen as a psychological force, uniting individuals through shared passions, emotions, and feelings, even though humans are distinct beings. David Hume echoed Shaftesbury’s views, but acknowledging that our sentiments are inherently partial and “confined to a few persons”, making it impossible to love humanity as a whole. However, he also recognized the critical role of pity and sympathy. The “passion of pity” stemmed from the “general principle of sympathy”, and since all humans shared a fundamental similarity (the principle of “resemblance”), they could readily adopt and share the emotions and perspectives of others “with ease and pleasure”.

In the French *Encyclopédie*, as we have seen, the Chevalier de Jaucourt linked sympathy to both physiology and anatomical physics, defining “sympathie” as

cette communication qu’ont les parties du corps les unes avec les autres, qui les tient dans une dépendance, une position, une souffrance mutuelle, συμπάθεια, & qui transporte à l’une des douleurs, les maladies qui affligent l’autre [...] est donc l’harmonie, l’accord mutuel qui regne entre diverses parties du corps humain par l’entremise des nerfs, merveilleusement arrangés, & distribués pour cet effet.

He attributed the pains of the eyes, head, ears (the “most acute”), teeth, stomach, kidneys, bladder, and other areas to movements, expansions, compressions, and contractions of the nerves, rather than the membranes, as earlier, flawed theories had suggested. The author only briefly mentioned that pleasant sensations could also be

transmitted in this way. It was Rousseau, however, who gave new prominence to the ideas of sympathy and compassion, viewing pity as natural and universal. Rousseau's philosophy greatly influenced Adam Smith and the moral philosophy of the Scottish Enlightenment. Smith's *Theory of Moral Sentiments*, published in 1759, opens with a chapter dedicated to sympathy. Smith believed that

*how selfish soever a man be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it*⁶¹.

Compassion or pity are the feelings we experience when witnessing the suffering of others. Our senses don't directly tell us what another person endures, but through *imagination*, we place ourselves in their situation and imagine inhabiting their body. When people with sensitive dispositions see the sores and wounds of beggars on the street, they often feel the corresponding sensations in their own bodies. This interaction arises from imagining the pain they would experience themselves. Whether physical or emotional, pain is a "more pungent sensation" than pleasure, and we tend to have a more intense and vivid reaction to others' pain than to their pleasure. At the same time, however, Smith noted that bodily pain doesn't always stir sympathy, or it may elicit a response disproportionate to the intensity of the sufferer's pain. Regarding physical pain, he observed that losing a leg is generally seen as a more substantial loss than the loss of a lover⁶². However, it is also true that "nothing is so soon forgotten as pain", and not all forms of pain evoke sympathy. Often, we empathize more with the sufferer's fear, as we fear experiencing the same suffering ourselves. For instance, although gout and toothache are extremely painful, they tend to provoke "very little sympathy", while more serious, yet less painful, diseases generate stronger empathy. We are more likely to sympathize with pain caused by an external injury than by internal disorders. Although we may have only a vague understanding of the pain caused by gout or kidney stones, we can clearly envision the suffering caused by wounds or broken bones. Smith suggested that the cutting or tearing of flesh might be the bodily affliction that provokes the most intense sympathy in a spectator. Nevertheless, the routine practice of dissections and amputations tends to foster indifference and desensitization in surgeons. In Greek tragedies, efforts were made to evoke compassion by depicting physical pain. However, illustrating something like a colic would seem ridiculous, as we tend to empathize more with the hero's mental suffering, his solitude, and the anticipation of his death.

Smith concluded that we show limited sympathy for physical pain, considering it the basis for "the foundation of the property of constancy and patience in enduring it". Conversely, we respect those who endure extreme torture without displaying signs of suffering⁶³. Regarding the sight of surgical instruments – dissecting and amputation knives, saws for cutting bones – Smith considered it "absurd and shocking". Even

though the long-term effects of these instruments, i.e., the patient's health, are favorable, their immediate effect is painful and unpleasant.

It didn't take long for the ideas of benevolence espoused by Smith and other English moralists, particularly Francis Hutcheson, to make their way into medicine and surgery. John Bell shared these moral sentiments, and the influence of "The Lancet" soon followed. In 1824, an anonymous correspondent penned a letter expressing concern about the practices in certain London hospitals. The writer described the anxiety, distress, and fear experienced by patients, even while waiting for surgery. He recounted a case he personally witnessed involving the removal of a stone from a boy's bladder⁶⁴. The surgeon inserted a metal instrument into the urethra to locate the stone but failed and handed it to a colleague. This procedure took twenty minutes, during which the boy screamed in agony, even before the actual operation began. This testimony is one of many featured in "The Lancet" during the early 19th century, reflecting a growing sensitivity among doctors during the era before anesthesia⁶⁵. The shift in attitudes towards pain and patient fear is represented by Sir Astley Cooper, one of the most famous English surgeons of the time, who questioned whether, "placed under similar circumstances, we should choose to submit to the pain and danger we are about to inflict". Cooper further noted that, "guided by this principle", the surgeon completed the operation (involving the ligation of the aorta) without any pangs of conscience, unlike those who must subject their patients to pain and danger⁶⁶. "Bransby" Cooper, the nephew of the renowned surgeon, followed his uncle's career path but never achieved the same level of fame. In 1828, "The Lancet" published an article detailing one of Bransby's disastrous lithotomy procedures, which lasted nearly an hour and resulted in the death of the patient. This incident sparked a significant controversy, in which the editor, Thomas Wakley, became involved. Wakley was dedicated to combating nepotism and incompetence while pushing for modernization in the medical field. The article in "The Lancet" portrayed the operation as a three-act tragedy⁶⁷. In Act I, the patient (a 53-year-old who appeared healthy) was introduced, and the first incision (in the perineal area) was made. The surgeon then attempted to use a knife to access the prostate and reach the bladder. At this stage, Bransby Cooper should have used forceps to remove the stone, but he was unsuccessful. In Act II, multiple forceps were tried. Although Bransby Cooper located the stone using a sound, he was unable to remove it with either his fingers or the forceps. Finally, after much difficulty, the stone was extracted, and Bransby explained to the students that he couldn't understand why the operation had been so difficult – perhaps due to a "deep perineum"? In the final Act, the patient, exhausted, had leeches applied, but passed away the following evening. The autopsy revealed that the problem wasn't a deep perineum, but rather the enlarged prostate, which had obstructed access to the bladder. The article published in "The Lancet" caused such a stir that Bransby Cooper filed a defamation lawsuit against its editor, Thomas Wakley. Although Bransby won the case, the event

left a lasting impact on him, and for the rest of his life, he was known to be “unduly emotional”⁶⁸. However, this period marked a turning point.

Beginning in Scotland, the so-called “politics of sensibility” had started to take shape, reflecting the spirit of the early 19th century. John Bell, known as a “man of feeling”, was one of its pioneers, and late-Georgian Edinburgh became the cradle of this emotional regime. This movement also developed as a critique of exaggerated and theatrical displays of sentiment, which threatened the credibility of authentic emotional expression. In contrast, physiological responses – such as the movement of the heart and lungs – were considered “embodied qualities”. From these foundations, the field of medico-psychological studies began to emerge, emphasizing empathy and embodiment as essential aspects of the doctor-patient relationship. In evolutionary biology, thinkers like ethologist Frans de Waal have advocated for the importance of cooperation and mutual aid among animals (including humans) over the primitive struggle for survival.

Acknowledgements

The Author wishes to thank Gabriele M.E. Biella for his significant suggestions.

Bibliography, notes and references

1. Bonica JJ, History of Pain Concepts and Pain Therapy. *Mt Sinai J Med.* 1991;58(3):191-202; Scarry E, *The Body in Pain.* Oxford: University Press; 1985; Morris DB, *The Culture of Pain.* Berkeley: University of California Press; 1991; Baszanger I, *Pain: Its Experience and Treatments.* *Soc Sci Med* 1989;29(3):425-434; Rey R, *Histoire de la douleur.* Paris: La Découverte; 2011.
2. Cabanis PJG, *Rapports du physique et du moral de l’homme.* I. Paris: Caille et Ravier; 1853. p. 152: “Cet homme intérieur, c’est l’organe cérébral”.
3. Whytt R, *An Essay on the Vital and Other Involuntary Motions of Animals.* Edinburgh: Hamilton, Balfour, and Neill; 1751.
4. Cunningham AS, *Sympathy in Man and Nature.* Dissertation at University of Toronto; 1999.
5. Arasse D, *La guillotine et l’imaginaire de la Terreur.* Paris: Flammarion; 1987. pp. 20-21.
6. Pigaillem H, *Le Docteur Guillotin: Bienfaiteur de l’humanité.* Paris: Pygmalion; 1991.
7. Chamayou G, *The Debate over Severed Heads: Doctors, the Guillotine and the Anatomy of Consciousness in the Wake of the Terror.* *RHS* 2008;61(2):333-365.
8. Sue JJ, *Opinion de JJ. Sue sur la douleur qui survit à la décolation.* In: Sue JJ, *Recherches physiologiques et expériences sur la vitalité.* Paris: Fuchs; 1797. pp. 51-76.
9. *Ibid.*, pp. 51-52.
10. Cabanis PJG, *Ref. 2.* p. 117.
11. Cabanis PJG, *Note adressée aux auteurs du Magasin encyclopédique, sur l’opinion des Messieurs Oelsner et Sömmerring et du citoyen Sue, touchant le supplice de la guillotine par le citoyen Cabanis.* *Magasin encyclopédique ou Journal des sciences, des lettres et des arts* 1795;5:155-174.
12. Petit MA, *Discourse sur la douleur.* Lyon: Reyman; 1798. p. 6 and p. 8.

13. Petit MA, *Essai sur la médecine du coeur...* Lyon: Durand et Perrin; 1823.
14. *Ibid.*, p. 42.
15. *Ibid.*, p. 124.
16. Petit MA, Ref. 12.
17. Cabanis PJG, Ref. 2. p. 425.
18. Petit MA, Ref. 13. p. 263. In light of the political climate in France, Petit examined how the revolution impacted not only the character and temperament of the population, but also the prevalence of diseases. He noted that due to “healthy shocks”, numerous illnesses – especially those linked to debility, weakness, and atony – had vanished. However, the stress of these events had also led to an increase in white hairs among the population.
19. Rey R, Ref. 1. p. 146.
20. Bordeu T, *Recherches sur le tissu muqueux ou l’organe cellulaire...* Paris: Didot; 1767. p. 88.
21. Bordeu T, *Recherches sur maladies chroniques...* Paris: Rouault; 1775. pp. 115-116.
22. Barthez PJ, *Nouveaux Éléments de la science de l’homme. t. I.* Paris: Martel; 1778.
23. *Ibid.*, p. 254.
24. Hoffmann F, *Medicina rationalis systematicae...* Tomus quartus, Pars I, Venetiis; 1745.
25. Brown J, *The Elements of Medicine translated from the Latin...* I. London: Johnson; 1795.
26. Cabanis PJG, Ref. 2, p. 196. To illustrate the connection between physical pain and moral faculties, Cabanis referenced a testimony from Cardano, who confessed that he had to fall ill to fully appreciate moral capacities and needed to induce artificial pains to keep a devouring restlessness at bay.
27. Fouquet H, *Essai sur les vésicatoires.* Montpellier: Seguin; 1818. p. 12. In this regard, Fouquet quoted Hippocrates, Aphor., Lb VII.
28. Petit MA, Ref. 12. pp. 61-62.
29. Tröhler U, *Quantification in British Medicine and Surgery 1750-1830, with Special Reference to its Introduction in Therapeutics.* Thesis. London: University College; 1978. p. 298. See also Gruber DR, *Bodies in Genres of Practice: Johann Ulrich Bilguer’s Fight to Reduce Field Amputations.* *J Med Humanit.* 2019;40(20):1-19.
30. Bilguer JU, *A Dissertation on the Inutility of the Amputation of Limbs.* London: Baldwin; 1764. p. xv.
31. *Ibid.*, pp. 3, 4, 6, 17 and 23.
32. *Ibid.*, pp. 32 and 39.
33. De La Martinière GP, *Mémoire. Sur le traitement des plaies d’armes à feu.* Académie Royale de Chirurgie, IV. Paris: Menard et Desenne; 1819. pp. 133-146. Louis A, *Éloge de Lamartinière, lu dans la séance publique du 22 avril 1794, in Éloges lus dans les séances publiques de l’Académie Royale de Chirurgie de 1750 à 1792.* Paris: Baillière; 1859. pp. 296-305. See also Judet H, *Portrait de Germain Pichault de La Martinière.* *Académie de Chirurgie Magazine* 2012;7:8-9.
34. Alanson E, *Practical Observations on Amputation, and the After-Treatment.* London: Johnson; 1782. Preface. See also Tröhler U, *Edward Alanson, 1782: Responsibility in Surgical Innovation.* *J R Soc Med.* 2008;101;607-608.
35. Alanson E, Ref. 34. pp. xvii, x-xii.
36. Brown M, *Wounds and Wonder: Emotion, Imagination and War in the Cultures of Romantic Surgery.* *JECS.* 2020;43(2):239-259.
37. Bell J, *Discourses on the Nature and Cure of Wounds.* Edinburgh: Bell and Bradfute; 1795.

38. *Ibid.*, p. 2.
39. *Ibid.*, p. 234.
40. This is not the place to explore the deeper meanings behind the concepts of “imagination” and “fantasy” that Bell highlighted in his teachings, nor the political and social ramifications of his educational methods, which Michael Brown examines with insightful reflections and a comprehensive bibliography (see Brown M, Ref. 36. p. 244 and elsewhere).
41. Riches E, History of Lithotomy and Lithotrity. *Ann R Coll Surg Engl.* 1968;43(4):185-189.
42. Brown M, The Compassionate Surgeon: Lessons from the Past. *Feature. RCS Bulletin* 2015;98(1). <https://doi.org/10.1308/rcsbull.2015.28>: (Accessed 4 November 2024).
43. Charter of the Royal Infirmary of Edinburgh. The Charter text in English, Poster 2. p. 38. <https://www.lhsa.lib.ed.ac.uk/exhibits/charter/index.htm>: (Accessed 3 November 2024).
44. This clash is skillfully reconstructed by Brown M, Surgery, Identity and Embodied Emotion: John Bell, James Gregory and the Edinburgh ‘Medical War’. *History* 2018;104:19-41.
45. On the likely prior opposition to Bell by James Gregory, see the lecture of Walls EW, John Bell, 1763-1820. *Med. Hist.* 1964;8(1):63-69.
46. *Ibid.*, p. 116.
47. Gregory J, Additional Memorial to the Managers of the Royal Infirmary. Edinburgh: Murray & Cochrane; 1803. p. 137.
48. Bell J, Answer for the Junior Members of the Royal College of Surgeons of Edinburgh, to the Memorial of Dr. James Gregory. Edinburgh: Hill; 1800. p. 4.
49. Brown M, Ref. 44. p. 36.
50. Gregory J, Lectures on the Duties and Qualifications of a Physician. London: Strahan; 1772. pp. 69, 5, 50. See also Bell J, Letters on the Education of a Surgeon, and the Duties and the Qualification of a Physician addressed to James Gregory, M.D. Edinburgh: Moir, 1810. p. 37.
51. *Ibid.*, p. 41.
52. Bell J, Ref. 48. Section III, p. 2.
53. *Ibid.*, Section II, p. 7.
54. Bell J, Ref. 50. p. 38.
55. Bell J, Ref. 48. Section II, p. 8.
56. *Ibid.*, p. 37.
57. Since the time of Pierre Franco in the sixteenth century, the difficulties of extracting bladder stones were well known. Franco had introduced a “two-stage” operation (“en deux temps”) because the strenuous attempts to remove the stone “at one sitting” could be fatal due to the extreme pain for the patient and risky because of the potential loss of blood. The second attempt could take place several days later and resulted easier and less painful.
58. For a review on this “most commonly discussed operation in surgical circles”, see Wangensten OH, Wangensten SD, Wiita J, Lithotomy and Lithotomists: Progress in Wound Management from Franco to Lister. *Surgery* 66:929-952.
59. Bell J, Ref. 50. p. 563. See for previous quotes also pp. 538 and 380.
60. Sidgwick H, *Outlines of the History of Ethics.* London: Macmillan; 1902. p. 187.
61. Smith A, *The Theory of Moral Sentiments.* London: Bohn; 1853. p. 3.
62. *Ibid.*, p. 36.
63. *Ibid.*, p. 38.
64. *The Lancet* 17 July 1824:91-93.

65. Brown M, Surgery and Emotion: The Era before the Anaesthesia. In: Schlich T (ed.), *The Palgrave Handbook of the History of Surgery*. London: Palgrave Macmillan; 2017. pp. 327-348. <https://www.ncbi.nlm.nih.gov/books/NBK481552/>: (Accessed 3 November 2024).
66. Cooper A, Travers B, *Surgical Essays*. Part I. London: Cox; 1818. p. 102.
67. See “Libel and Lithotomy”. <https://www.thomas-morris.uk/libel-and-lithotomy/>: (Accessed 5 November 2024).
68. The Royal College of the Surgeons of England. Plarr’s Lives of the Fellows. “Cooper, Branbys Blake (1792-1853)”. [https://livesonline.rcseng.ac.uk/client/en_GB/lives/search/detailnonmodal/ent:\\$002f\\$002fSD_ASSET\\$002f0\\$002fSD_ASSET:373445/one?qu=%22rcs%3A+E001262%22&rt=false%7C%7C%7CIDENTIFIER%7C%7C%7CResource+Identifier,created+21+July+2011](https://livesonline.rcseng.ac.uk/client/en_GB/lives/search/detailnonmodal/ent:$002f$002fSD_ASSET$002f0$002fSD_ASSET:373445/one?qu=%22rcs%3A+E001262%22&rt=false%7C%7C%7CIDENTIFIER%7C%7C%7CResource+Identifier,created+21+July+2011): (Accessed 3 November 2024). See also: <https://www.thomas-morris.uk/libel-and-lithotomy/>: (Accessed 4 November 2024). Neither did the “anonymous” author of the article (James Lambert) come out well from this situation, and he was banned from all medical and surgical associations.

