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# The Phenomenon of Spontaneous Human Combustion in Eighteenth and Nineteenth Century Spain

**Antonio Pérez-Pérez and José Ramón Vallejo ***

Departamento de Anatomía Patológica, Historia de la Ciencia, Medicina Legal y Forense y Toxicología, Facultad de Medicina, Universidad de Cádiz, E-11003 Cádiz, Spain
* Correspondence: joseramon.vallejo@uca.es

**Abstract**

Spontaneous human combustion, today scientifically discredited, was considered a legitimate medical entity in Europe beginning in the 17th century. The aim of this study is to analyze Spanish medical conceptions about this phenomenon between the 18th and 19th centuries, starting from the world context. Primary sources were used with a deductive–inductive approach. Beyond providing an account of a discarded medical theory, this work explores how certain categories of knowledge persist, disappear, and resurface under different belief systems. We analyze how the Spanish medical discourse on SHC evolved in three stages: exposure, debate, and rejection. This allows us to observe changes in medical mentality regarding factors such as searching for sources of ignition and moderating alcohol consumption as a preventive health measure. This study and its historiographical approach enable us to explore broader issues relating to ignorance, alternative ideas, the stability of scientific knowledge over time, and shifts in the field of legal and forensic medicine. This research provides a model for analyzing the complex dynamics of knowledge and its evolution at the intersection of science, culture, and power.

**Keywords:** legal and forensic medicine; 18th–19th centuries; history of medicine; ignorance; alcoholism; temperance; science and society

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## 1. Introduction

In the eighteenth and nineteenth centuries, spontaneous human combustion (SHC) referred to the burning of a living human body without an evident external cause of ignition, a phenomenon that had shocked and confused European society since the early Modern Age. The term was coined by Paul Rolli (1745) in his well-known article published in Philosophical Transactions of the Royal Society of London, following the mysterious death of Countess Cornelia Zangheri Bandi. Rolli, a member of the Royal Society, was responding to a proposal made by the German physician Johann Heinrich Cohausen (1717), who suggested that some substances contained in the body, when combined with alcoholic beverages, could give rise to a spontaneous flame inside the body, which would explain these cases of human combustion.

In any case, as Thurston (1938) pointed out, SHC occupied much of the literary work of the European and North American medical world in the eighteenth and nineteenth centuries. Over time, various authors tried to describe the context, characteristics and singularities of this phenomenon to elucidate the cause-and-effect relationship (Koljonen and Kluger 2012). SHC tended to take place in winter and in the early morning, in areas that were usually closed, very often in the bedrooms of the victims. Analysis of the environment

determined the absence of an external source of heat or ignition. Therefore, it was believed that the fire started spontaneously inside the victim's body in the form of a blue, barely visible flame—like wildfire—and was impossible to extinguish with usual fire retardants, such as water. In addition, when a medical diagnosis was made, the burns were much more severe than in other well-determined etiologies. The damaged bodies were usually reduced to ashes, or only isolated parts of the body were preserved, usually the most distal segments, such as the head or skull, hands or feet; that is, the burns were not distributed uniformly. The cadaveric remains were sometimes scattered by the walls and around the dwelling, in which case it was designated "spontaneous human explosion." The floor and the area around the victim below a height of one meter, including objects such as clothes and household goods, usually suffered little or no damage from the fire. Above this height, nearby surfaces were usually covered by a greasy, thick and malodorous soot and sometimes by sticky yellowish liquid with a foul or "empyreumatic" odor. A relevant fact is that those affected were usually older adults, generally women over 60 years of age who were overweight or extremely obese, with mobility problems, chronic diseases, alcoholism or an addiction to barbiturates. In addition, they were usually alone at the time of ignition; that is, in most recorded cases, there were no eyewitnesses to the event.

When characterizing the phenomenon, without a body to examine or witness reports, difficulties arose in determining its causes. In this historical context, throughout the 18th and 19th centuries, many scientists supported spontaneity in certain cases of human combustion. However, others sought to determine the roots of this phenomenon based on deductive arguments, whose extrapolation to the present day would not be applicable (Koljonen and Kluger 2012).

The historical phenomenon of SHC, though scientifically discredited, continues to be a subject of fascination and conjecture. While the international scientific community has long regarded SHC as scientifically unfounded—a myth or a fallacy (e.g., Rouzé 1987; Benecke 1998; Stempsey 2006; Byard 2016)—the attempts to explain it, particularly in the 20th century, provide a rich case study for the history of science. These explanations are often characterized by causal fallacies, particularly the non causa pro causa or "questionable cause" fallacy, which mistakenly identifies an insufficient or unrelated event as the cause of a phenomenon. Analyzing these discredited theories, therefore, offers a unique epistemological framework for understanding how flawed knowledge is constructed, disseminated, and sustained.

In the 20th and 21st centuries, the etiology of SHC was a subject of ongoing, albeit non-mainstream, speculation. A recurring theme in these theories is the attempt to link the incinerating effect to internal biological, metabolic, or physical processes, all of which fall prey to the non causa pro causa fallacy by failing to establish a valid causal mechanism. For example, some conjectures linked SHC to dietary disorders or biochemical imbalances (e.g., Randles and Hough 1993; Abrahamson and Dinniss 2000). A prominent instance of this is the ketosis theory proposed by English microbiologist Brian Ford (2012a, 2012b). Ford suggested that severe ketosis, a metabolic state that produces acetone, could be the cause of SHC. While acetone is indeed highly flammable, scientific analysis reveals the fallacy of this claim. The concentration of acetone in the blood of even a severely ketotic individual is exceptionally low (approximately 0.03%), making a self-sustaining combustion event physically impossible. The heat generated would be negligible, and the theory contradicts the fact that most SHC victims were overweight or obese, not typically prone to the hypoglycemia that precedes extreme ketosis. Similarly, other hypotheses demonstrate this fallacious reasoning. In their bacterial theory, Ayoade (2019) proposed that uncontrolled bacterial growth could generate enough internal heat to cause combustion. This theory is medically unsupportable; a massive infection would cause death long before reaching

the approximately 920 °C required to incinerate a human body. Likewise, the phosphorus theory, with roots in the 19th century work of physician Frank (1841) and revived by Pescod in 1996, posited that internal phosphorus compounds could ignite the body (Benecke 1998). However, as chemist Emsley (2000) noted, the phosphorus in the body is in an oxidized state (e.g., phosphates), not elemental, making spontaneous combustion through this mechanism chemically improbable. Beyond these biological and chemical conjectures, other attempts to explain SHC venture into the realm of pseudoscience, further highlighting the fallacious nature of the reasoning. Hypotheses linking SHC to paranormal phenomena, such as poltergeist activity (Harrison 1977; Alonso Marcos and Cortiñas Rovira 2014) or to fictional subatomic particles like the "pyrotron" (Arnold 1995), are classic examples. These ideas commit the non causa pro causa fallacy on a fundamental level, positing causes that are themselves unproven or scientifically non-existent (Simmons 1996). The same applies to the theory that SHC is caused by Kundalini energy, which purportedly generates enough heat to trigger a "biologically induced, low-energy nuclear explosion" (Benford and Arnold 1997), a claim that clashes with basic principles of energy barriers (Torres 2000).

These discredited theories, while incorrect, are not merely historical curiosities. They represent an integral part of the history of knowledge that deserves analysis via a systematic and critical approach. A historiographical framework focused solely on a "history of positive science" that chronicles correct theories and successful discoveries is insufficient for understanding phenomena like SHC. A more productive approach would be a symmetrical study of both "legitimate" and "illegitimate" knowledge, as proposed by the "history of negative science" (Daston 2017; Rathjen and Stähelin 2022). This involves not only verifying the falsity of a theory but also analyzing the social, cultural, and personal factors that contributed to its construction, persistence, and eventual deconstruction.

This approach acknowledges that what constitutes "legitimate" knowledge is mutable and subject to fluctuations in belief systems, therefore recognizing that speculative narratives also play a significant role in shaping public understanding (Cortiñas Rovira and Moya Arrabal 2018). For example, the misrepresentation of Brooklyn Polytechnic Institute's Professor Beach as a combustionist (Beach 1945) or the analysis of Sigaud de la Fond's (1781) work (Lynn 2019, 2023) highlight how false narratives are deliberately constructed.

Therefore, a comprehensive study of SHC must move beyond a traditional analysis of medical or scientific texts. It requires incorporating a wide array of sources—from academic journals to popular literature, and even contemporary social media narratives (see Perera 2025)—to trace the complete lifecycle of these theories. By doing so, we can demonstrate how information, whether legitimate or illegitimate, is mutable, deformable, and oscillating, providing a more holistic and nuanced understanding of how causal fallacies continue to shape our perception of both the past and the present. The history of SHC thus is a powerful lens for examining the very nature of knowledge, belief, and intellectual error (Omes 2023; Tortosa 2023).

It is important to note that, until now, the narrative constructed by the historiography of science can be summarized around the axiom "old, obese and alcoholic." Similarly, some approaches, both classical and recent, relate SHC to alcohol consumption and the virtue of temperance (Ramón García 2024). Historiographic development in relation to moral discourses is also defined outside the academic medical context. For example, in 1800, the French agronomist Pierre Aimé Lair defended the direct relationship of the phenomenon with the chronic abuse of alcoholic beverages and its prevention by means of "the virtue of temperance" (Lair 1800).

In the literature of the last century and during the 21st century, cases have been reported from diverse medical fields, including forensic medicine, forensic medicine and anthropology, and other multidisciplinary medical periodicals (Gromb et al. 2000; Koljonen

and Kluger 2012; Byard 2016). Similarly, there are studies in non-medical academic journals of a historical, literary, ethnographic or folkloric nature in countries such as England or France (Ramón García 2024).

Given this background, it is important to note that the scientific community has not yet published a medical historical analysis of this phenomenon in Spain. The relevant data is either widely dispersed or included in the grey literature. For this reason, our initial motivation in undertaking this study was to address this lack of research.

Therefore, we have set out to describe the various thoughts on SHC in eighteenth and nineteenth century Spain. Specifically, our objectives are (i) to detail the contributions made by Spanish physicians and surgeons on this phenomenon during the eighteenth and nineteenth centuries and (ii) to classify the evolutionary phases of acceptance or rejection of the spontaneous nature of human combustion considering sociocultural factors and values. These objectives require an approach that identifies which primary sources, characters, problems and controversies have played a role in its conceptual construction. In this sense, the Spanish cultural, educational and university crisis during the eighteenth century presents an interesting context for understanding local ideas about SHC. Thus, the work of Benito Jerónimo Feijoo represents a turning point for at least three significant reasons: (i) the importance and impact of his personal project to combat ignorance and superstition; (ii) his critical view of the medicine of his time; and (iii) the scientific policy of the eighteenth century. Therefore, from this historiographic approach to the study of SHC in Spain, a narrative review has been conducted using the main multidisciplinary and historical databases and virtual repositories and libraries on the historical press. Likewise, we hope to stimulate a debate around concepts, ideas or theories that may seem strange and be cataloged as erroneous or illogical outside their spatial and temporal contexts, as opposed to others where the cause–effect relationship is arbitrary or fortuitous.

It is important to note that this is a subject, based on the state of the art, that allows for innovative, creative, and critical approaches from many angles, especially from the history of science, or from the history of medicine and science, as some prefer, thus establishing a demarcation from science itself. In essence, the subject is one that permits extensive investigation, thereby encompassing history, philosophy, anthropology, sociology, science, and cultural studies—that is to say, human knowledge in its most expansive sense. This is an issue that goes beyond itself.

## 2. International Historical Overview

The following overview of European and North American knowledge on this subject is provided to facilitate an understanding of what happened in Spain during the eighteenth and nineteenth centuries (see Table 1).

**Table 1.** Summary of historical cases described in the selected international narratives.

| Century | Description | Factor Associated with SHC | Reference |
|---|---|---|---|
| 17th–18th | A man in Hampshire, UK | For no apparent reason | (Hilliard 1613) |
| | A Polish soldier | Alcohol consumption | (Bartholin 1654) |
| | Countess Cornelia Zangheri Bandi | Alcoholic beverages | (Johann Heinrich Cohausen 1717) |
| | Countess Cornelia Zangheri Bandi | Camphorated alcohol | (Giuseppe Bianchini 1731) |
| | The elderly wife of a local fisherman | Mysterious manner | (John Martyn 1756) |

**Table 1.** *Cont.*

| Century | Description | Factor Associated with SHC | Reference |
|---|---|---|---|
| | The wife of the tavern owner | Alcoholism | (Dupont 1763) |
| | A woman, according to a Coventry surgeon | Alcoholism | (Bradford Wilmer 1774) |
| 19th | A young woman allegedly murdered | No apparent cause | (Le Cat 1813) |
| | A man in Västergötland | Alcoholism | (Carl Heinrich Rösch 1839) |
| | The Countess of Görlitz | "A spontaneous combustion or ignition would have a great probability only on the supposition that there was no evidence of an act of violence" | (Johann Adam Graff 1850) |
| | Generalized cases | Chronic alcoholics | (Alexander Ogston 1870) |
| | 65-year-old retired soldier | Alcoholism | (J. Mackenzie Booth 1888) |
| | 49-year-old woman | Strictly a temperate person, active habits and nervous temperament | (Benjamin Hall Hartwell 1892) |
| | Tests on animals to prove the veracity of SHC | Experimental research | (Havà 1894) |

### *2.1. European Literature Between 1613 and 1786*

The first written reference to a death from SHC is found in John Hilliard's Fire from Heaven (Hilliard 1613), which describes the death, on June 26 of the same year, of John Hittchell in Holme Hurst (Hampshire, UK) as he lay in bed next to his wife and exhaled thick smoke from his mouth with no apparent cause. Subsequently, the Danish physician and theologian Thomas Bartholin, known for describing the lymphatic system for the first time and being a strong advocate of SHC, described several cases in 1654 based on previous reports by René Moreau, a Parisian physician, and Adolphus Vorstius, a professor of medicine in Leiden. Among others, he described the death of a Polish soldier who, during the reign of Queen Bona Sforza and after drinking two glasses of brandy with his parents at their home in Milan, burped and immediately succumbed, spontaneously bursting into flames (Bartholin 1654, pp. 109–10). In the same vein, the French physician Ionas Dupont documented the testimony of the Gallic surgeon Claude-Nicolas Le Cat in the trial held in 1725, in the French city of Reims, against Jean Millet, the owner of the tavern Lion d'Or, having found the corpse of his wife, Jeanne Lemaire, after she had been simmering in the kitchen of his canteen (Dupont 1763, pp. 9–10). In his writing, Dupont noted that Lemaire suffered from alcoholism and that they were only able to identify her legs, a part of the head, some dorsal vertebrae and some other large bones; the rest of her body was a blackened and greasy mass. Millet was charged with murder, an offense that carried the death penalty. However, Le Cat won his acquittal by convincing the jury that Lemaire had been the victim of SHC. News also appeared in the work Mémoire posthume Sur les incendies spontanés de l'économie animale, published in 1813 by Le Cat himself (1813, pp. 18–21), as an extract from the Journal de Médicine by Jean-Nicolas Corvisart, Jean-Jacques Leroux and Alexis Boyer.

Likewise, Giuseppe Bianchini (1731), a priest of Verona, recorded the appearance of the burnt body of the 62-year-old Countess Cornelia Zangheri Bandi. The remains were found on the morning of 14 March 1731, by her housekeeper in the house that the aristocrat

owned in Cesena (Italy). Among her ashes they could only identify her legs, with her stockings intact, her skull and three blackened fingers. The room was covered with a thick, sticky and foul-smelling soot and yellowish liquid. Next to the remains of the body of the victim, who was in the habit of bathing with camphorated alcohol when indisposed, a small empty oil lamp was found. This case was debated in 1744 at the Royal Society of London, with the participation of Paul Rolli. The death of John Hittchell, mentioned above, and the astonishing combustion of Grace Pett in the English city of Ipswich on 10 April 1744, documented by the botanist John Martyn (1756), would also be the subject of discussion. Grace Pett was the elderly wife of a local fisher, who was in the habit of smoking a tobacco pipe in the early hours of the morning in the kitchen of his house before going to sleep. She died on 9 April 1744, and, the next morning, her daughter found her charred remains under mysterious circumstances.

Bradford Wilmer (1774), a surgeon from Coventry (England), also reported in 1774 the death of Mary Clues, an alcoholic who was found in her house completely cremated except for the femurs and some large bones.

These events, as well as others reported in the press of the time (Grabner-Maraschin 1823), led to the theory of SHC being incorporated into the European medical knowledge of the eighteenth and nineteenth centuries, practically without objection. It is important to emphasize that SHC became conceptually embedded as a nosological entity among the European medical class because of the new scheme that arose to explain certain chemical phenomena. Hence, it is essential to understand that, initially, the phlogiston theory seemed to be a plausible explanation during a good part of the 18th century. In fact, it allowed the combustion of organic matter to be conceived as a violent release or escape of phlogiston from burning bodies until they were reduced to ashes. This theory seemed very coherent since it could explain other more practical and useful chemical transformations, such as the production of metals. For this reason, the controversy between supporters of this theory and one based on oxidation was assured, and experimentation, empiricism and conceptual debate came into play. As the primordial origin of these discussions, it is worth mentioning the contributions made by the German vitalist and physician Georg Ernst Stahl (1697) in his study of phlogiston, conceived as a substance associated with the principle of flammability. This concept made it possible to explain the combustion process based on the release of the "terra pinguis or sulphuorus", a hypothesis first proposed by the German alchemist Johann Joachim Becher (Becherus 1669). The later contributions of the French chemist Antoine-Laurent de Lavoisier (1777) led to the development of a new theoretical framework for combustion based on the oxidation of bodies. In this regard, it is interesting to note that, paradoxically, the British scientist Joseph Priestley (1772) interpreted his crucial experiments based on the phlogistic theory as opposed to the modern ideas defended by Lavoisier.

In short, this controversy is key to understanding the construction of modern chemistry, which is relevant to current medicine in that it led to a new theoretical framework that would finally reveal respiration as an oxidative phenomenon, and to the subject under discussion.

### *2.2. The Conceptual Framework in Europe and North America in the 19th Century*

In 1800, Pierre-Aimé Lair published an exhaustive review of SHC. He defended the direct relationship of the phenomenon with the chronic abuse of alcoholic beverages and its prevention through "the virtue of temperance" (Lair 1800). However, some authors, such as the Swedish physician Jöns Jacob Berzelius (1819), the French pharmacist Jean-Sébastien-Eugène Julia de Fontenelle (1828) and the Gallic surgeon Guillaume Dupuytren (1830), began to question the spontaneous nature of this supposed nosological entity. This position contrasted with that maintained by many other contemporary physicians who, like

Lair, defended its spontaneous nature to the hilt. Among them, it is worth mentioning the English surgeon Erasmus Lloyd Devonald (1832) and the German physician Carl Heinrich Rösch (1839). The latter advocated, as a preventive treatment for SHC, filling the mouths of dipsomaniacs at risk of spontaneous ignition with manure and muddy water. In line with these combustionist positions, we can also cite, for example, Frank (1841), a German physician–surgeon from Göttingen, who asserted that alcohol impregnated the organism with compounds containing phosphorus, which induced its spontaneous combustion. This hypothesis was accepted by the Swedish physician Magnus Huss in his famous work on alcohol addiction (Huss 1852, pp. 45–46). Others, however, such as Franz Joseph Strubel (1848), also a German physician, suggested that, instead, electrical currents produced inside the body were capable of splitting water into its basic components, oxygen and hydrogen, which would explain the cause of this phenomenon. Finally, we refer to the writing of John Grigor in 1852, a physician from Nairn (Scotland), who, in line with the previous proponents, was also a staunch defender of SHC (Grigor 1852).

The European medical journals that published papers disseminating the phenomenon included such renowned publications as The Lancet, British Medical Journal and Provincial Medical and Surgical Journal[1].

In conclusion, in the middle of the 19th century, there was a general belief among the European medical class, apart from some doctors and pharmacists already mentioned, in the spontaneity of certain human combustions. For instance, the literature of the time allows us to comment on cases such as the one that occurred on 13 June 1847, when Johann Adam Graff (1850), a municipal physician of the Duchy of Hesse and convinced advocate of this nosological entity, was called to examine the charred remains of the Countess of Görlitz. His opinion that SHC was the cause of death of the countess, despite evident signs of strangulation, is striking. In a later trial held in 1850 to clarify the cause of death of the aristocrat, this forensic verdict was repudiated by the German chemist Justus von Liebig and the German anatomist Theodor Ludwig Wilhelm Bischoff, not without controversy among the German medical community (Mata 1857, pp. 448–50).

It is important to consider the disciplinary evolution from "forensic surgery" in the 18th century to forensic medicine in the mid-19th century, where the theoretical and applied frameworks differ. This is reflected in recent studies on the changing relationships between science, medicine and law between the 18th and 19th centuries (Watson 2011; Burney and Hamlin 2019).

In any case, the debate began to shift in favor of the detractors of SHC in 1860 following the publication of the physician Johann Ludwig Casper (1860, pp. 342–48), a pioneer of forensic science in Germany, whose authority and arguments in this field left those who persisted in their assertion of the spontaneous nature of this entity, such as the medical doctor Louis Delmas (1867), unable to respond.

However, it should be noted that Great Britain generally maintained a position contrary to that of the rest of the European continent regarding the existence of this phenomenon. For example, Alexander Ogston (1870), a British surgeon famous for discovering *Staphylococcus aureus*, published an extensive review on this subject, in which he expressed his doubts that this alleged accident could be completely ruled out in certain cases of human combustion, especially in chronic alcoholics. Likewise, J. Mackenzie Booth (1888), a dental surgeon of a Scottish general dispensary in Aberdeen, defended this possibility in the death of W. Reid, a 65-year-old retired military man. Finally, like the two previous authors, Ernest Septimus Reynolds (1891), a physician of the Ancoats Hospital and an emeritus professor at the University of Manchester, did not explicitly accept the existence of SHC but left the door open to the possibility that chronic alcoholism could increase the combustibility of body tissues.

Around the same time, between 1889 and 1894, in the United States, extensive reviews were published in support of SHC on the basis of data from the United States and other countries; one such review was published by George Archie Stockwell (1889), a physician in Port Huron (Michigan). Similarly, Dr. Benjamin Hall Hartwell (1892), a physician in New England, supported this hypothesis in 1892, based on the death of a 49-year-old woman in the city of Boston on 12 May 1890. In the field of experimental research, in 1894, Adrian Havà, a physician from New Orleans, performed various tests on animals to prove the veracity of SHC (Havà 1894).

## 3. Spontaneous Human Combustion in Spain

In general, we can infer that, in Spain, the acceptance or rejection of the spontaneity of the phenomenon in question followed, broadly speaking, a parallel course to what happened throughout the rest of the European continent, although with some peculiarities that we will describe below.

Thus, we can distinguish three different phases in its historical development: (i) the first phase was exposition at the beginning of the XVIII century, where the origin of the phenomenon was explained, and attempts were made to demonstrate it; (ii) the second one was debate, initiated at the beginning of the XIX century, in which its etiology was discussed; and finally, (iii) the third one was disapproval, which began approximately in the middle of the XIX century and culminated, after some years, with its impugnation by the Spanish medical community.

### *3.1. Expository Phase*

The first relevant news published in Spain about SHC dates back to 1728, when the novator Martín Martínez, a physician of the General Hospital of Madrid and president of the Royal Society of Medicine and other Sciences of Seville, based on the works of Thomas Bartholin and Andreas Vulpacius, attributed its cause to the excessive ingestion of spirits but also with the ignition of the "sulfurous vapors" existing in the stomachs of those affected. This is how Martínez (1728, pp. 101–2) characterizes it:

> It is more admirable to see flames coming out of the stomach through the mouth in many who have drunk a great quantity of "aguardiente" (spirit or brandy): Vulpacio saw it and Bartolino testifies it. It has also been seen in corpses, when a hole has been opened in the stomach, and a light applied to it, flames are lit the cause of which is the sulfurous vapors which they exhale which, for any reason they are ignited inside the stomach, bursting through the mouth, cause fiery vomit, as been observed.[2]

In 1739, a reference about its origin was also studied by the Benedictine monk and enlightened Spaniard Benito Jerónimo Feijoo y Montenegro (1739, pp. 172–207), who, in alluding to the formation and origin of lightning, brought up the letter sent by the Marquis Scipione Maffei to the R. P. Hipólito Bevilaqua published in the Mémoires de Trévoux of 1731 and transcribed into Spanish in 1736 by the priest Juan Martínez Salafranca (1736, pp. 207–20). In this letter, the Italian nobleperson related the disastrous accident suffered that same year in Cesena by Countess Cornelia Zangheri Bandi, who, before going to bed, had the habit of washing herself with a spirit of wine when she was indisposed. The Italian Marquis attributed the cause of the event to a kind of "lightning fire" or external electrical explosion triggered by the "air charged with nitrous and sulfurous fluids", which evaporated from the body of the countess and fermented and ignited in the surrounding environment due to the idio-electricity present both in humans and in certain animals, as had been reported, among others, by the Hebrew physician Ezequiel de Castro (1642).

Within the "gazettal fables", Feijoo regarded this causal explanation as a "peregrine event", since, to him, it was a non-credible hypothesis. To prove his assertion, he argued extensively against the explanation given, pointing out, among other considerations, that such "fluids" could not accumulate outside the victim's body in a sufficient quantity to explain the supposed external deflagration responsible for the phenomenon (Benito Jerónimo Feijoo y Montenegro 1739, pp. 172–207). This paragraph is striking:

> (. . .) Perhaps, then, the Countess's humors could have been in such a disposition, that the aguardiente bath put the last disposition, or it could have been with cause required for the fire, doing what the link in the flint, that without being wounded by it, does not release sparks. But it could also be such a state of the humors, that without this help they would ignite. The nature, preparation and combination of them may suffice for this: of which curious proof is given by some chemical liquors, which are cold separately or each one by itself, and without any other operation than the mixture they ignite (Benito Jerónimo Feijoo y Montenegro 1739, pp. 187–88).[3]

To conclude,

> (. . .) it was never seen that any lightning would have such an effect. This operation, I say, requires not only a fire of great activity, but also a fire that is steady, stable and not fleeting, like that of the lightning (own translation). Consequently, it is necessary in the circumstances of that case, that it was ignited inside the body of the Countess (Benito Jerónimo Feijoo y Montenegro 1739, p. 207).[4]

Benito Jerónimo Feijoo sought its etiology in an internal, humoral or chemical cause, which he claimed was the most plausible explanation. Consequently, based on the previous publications of Johann Heinrich Cohausen (1717) and Martínez (1728), he opted in his writings, to the exclusion of nitrous and sulfurous "fluids", for "Kunkel's burning phosphorus" (white phosphorus) as the true cause of SHC. This, when combined with some other "particular disposition" in the countess's body, would have spontaneously ignited internally, giving rise to the phenomenon under discussion. This common allotrope of phosphorus was first isolated in 1669 from human urine by Hennig Brand of Hamburg, Germany. Brand kept his discovery secret until it was made public by Johann Kunckel in 1678 and Robert Boyle in 1680.

Benito Jerónimo Feijoo y Montenegro (1739), with his phosphoric hypothesis about the origin of SHC, took precedence over the work of Frank (1841), which was not made known in Europe until two years later. This is made clear in the following excerpt:

> But for the present case, we will give the most opportune proof of all, taken from the burning Phosphorus of Monsieur Kunkel. This Phosphorus, which is formed from human urine, and is of prodigious activity, conclusively persuades that there is in our bodies a matter, not only inflammable, when placed under some dispositions, that its fire is much more active than ordinary fire (Benito Jerónimo Feijoo y Montenegro 1739, p. 283).[5]

Feijoo's proposals had a great impact on the Spanish intellectual and medical class of the 18th century and could explain, on the one hand, the decades-long prevalence of the humoral or internal chemical theory as the most probable etiology of SHC and, on the other hand, the secondary role that was initially given to chronic alcohol abuse in its origin, in contrast to the positions held in the Protestant world. These circumstances can be verified, for example, in the 1753 writings of the writer and the bishop of Santander, Juan Jove Muniz (1753, pp. 147–48).

It should be added that Feijoo's influence on Spanish science was characterized by a pragmatic and innovative orientation, given the situation that existed at that time in Spain.

However, he also had detractors, and it is possible that there were thinkers who considered other etiologies in SHC. In fact, Ferdinand VI, being convinced of the importance and relevance of his ideas, went as far as to prohibit speech contrary to Feijoo's arguments by Royal Order of 23 June 1750. This disposition, with the force of law, was accompanied by an announcement in the Gaceta on August 4, where information was given about his new book, entitled Cartas eruditas, y curiosas (Gaceta de Madrid 1750, p. 252). Consequently, this historical fact of using authority to determine the veracity of knowledge can be seen as a hegemonic response, supporting not only Feijoo, but also the model of modern science in general. In any case, his thinking is in line with enlightened despotism and with the Bourbon reforms, which promoted important changes in Spanish medicine and science of his time.

It is significant that Feijoo, despite his clerical origin, tried to separate the moral and scientific aspects in his studies, as can be seen from how he recorded information or how he narrated his chronicles. When he had to give his own arguments, he made clear his position against fallacious arguments based on moral motives, such as those that implied a lack of virtue or alcohol abuse. This narrative is shown below through selected fragments from two of his works (Benito Jerónimo Feijoo y Montenegro 1739, 1754).

In the famous case of Countess Bandi, Feijoo demonstrates absolute fidelity to the data presented in this regard in the original. Benito Jerónimo Feijoo y Montenegro (1739, p. 173) writes:

> Among the admirable effects (he says) that from time-to-time Nature represents to us, hardly anything stranger has been seen than the disastrous accident that occurred in Cesena, whose description I am about to give. Madame Countess Cornelia Bandi, a woman of notorious piety and irreprehensible habits, aged 62, having gone to bed on the night of the fourteenth of March next, was found dead in the morning and reduced to ashes.[6]

Another lesser-known item is collected from Cohausen's Lumen novum Phosphoris accensum, printed in Amsterdam in 1717, whose transcription coincides with the axiom of the old, alcoholic woman. This is what Benito Jerónimo Feijoo y Montenegro (1739, p. 178) wrote:

> It is reported that a lady of Paris, accustomed for a long time to drink wine, was one night reduced to ashes and smoke by the flame that came out of her body, except for the skull and the extremities of the fingers; which proves that the event of Cesena is not unique in its kind, as that of Paris seems to share the same circumstances, where the skull and fingers were also saved from the fire.[7]

Another fragment, although not explicitly addressing SHC, refers to spontaneity in other combustions, which allows us to clearly identify the absence of moral or gender bias in his studies. We refer to the Respuesta a la relación de un raro Fenómeno ígneo, where he discussed the spontaneous combustion of some cloths made by a craftswoman, who was slandered as being responsible for this phenomenon because she made them on St. John's Day. It is evident that Feijoo's position is unambiguous on this matter:

> I am deeply sorry for the misfortune of this poor widow who, on top of losing part of her small estate, must suffer the slander that this loss caused and that she deserved as a punishment for her sin (Feijoo y Montenegro 1754, p. 335).[8]

### *3.2. Discussion Phase*

It would not be until the beginning of the 19th century that the debate among the Spanish nineteenth-century galenic class would definitively begin, at first timidly and later decisively, about the etiology of this phenomenon. The influence of the Biscayan physician

Ignacio María Ruiz de Luzuriaga is undeniable in this discussion, as he spread in the Peninsula, together with different medical knowledge coming from the European schools of the eighteenth century, positions aligned with Stahl and Priestley (phlogistic theory), as opposed to those aligned with the new ideas of Lavoisier (theory of oxygen, antiphlogistic) (Ruiz de Luzuriaga 1797). These opposing positions, as in the rest of Europe, contributed to a theoretical framework for this phenomenon in Spain.

In 1804, in the Correo de Sevilla, under the direction of the scholar and medical bachelor Justino Matute Gaviria, a paper was published that, in line with the contributions made by Martín Martínez and Benito Feijoo, also showed support for the internal chemical hypothesis on the origin of SHC (Matute Gaviria 1804). However, he emphasized, to the exclusion of phosphorus and nitro derivatives and sulfur derivatives, the main role played in its origin by hydrogen and "azotic" gas or nitrogen—the basis of "phlogisticated" air—without ruling out idio-electricity as a trigger of the same. The hypothesis of the Sevillian journalist is of great interest since it was formulated before the work of the Dutch doctor Charles Chrétien Henri Marc in 1807, made known in Spain in the same year of its publication in France (Marc 1807a, 1807b), and the works on the matter published in Europe by Jean-Sébastien-Eugène Julia de Fontenelle (1828) and by the German forensic doctor Wilbrand (1848).

Subsequently, at the beginning of 1805, a brief review was published in the magazine Efemérides de España by the lawyer, translator, scientific and political popularizer Pedro María de Olive regarding a case of SHC that occurred on March 16, 1802, in the state of Massachusetts (Tilloch 1805), published that same year in Philosophical Magazine by Alexander Tilloch (1802), a Scottish journalist and member of the Philosophical Society of London. The event affected an old woman in the vicinity of the hearth of her house while she was trying to light her pipe. The chronicles mentioned also indicate that incineration, in this case, was attributed, in principle, to the pipe's accidental fall onto the fire in the hearth. However, the small amount and low intensity of this, adjacent to the location of the victim, seemed insufficient to explain the reduction of her corpse to a pile of ashes mixed with grease. For this reason, the true cause was finally attributed, in a primitive writing in English, to a "spontaneous decomposition of the human body". The hypothesis was criticized in the Spanish chronicle due to the scarce details described in the original British publication.

On April 6 of the same year, a response to this article was provided in a letter addressed to the editor of the journal by the pharmacist, professor of Chemistry and Catalan physician Francisco Carbonell Bravo (Carbonell y Bravo 1805a). Also note that Carbonell, a leading figure in Spanish science of his time, was a disciple of the French chemist Joseph Louis Proust, who introduced the antiphlogistic doctrine in Spain. In his writing, Carbonell expressed his disagreement with the doubts raised in the aforementioned Spanish review about the nature of the aforementioned ignition, also indicating that this phenomenon had already been the subject of his attention in 1801 in a memoir printed in Montpellier, entitled De Chemie ad medicinam aplicationis, usu et abusu disceptatio, where he challenged the doctrine of Louis Hilaire Croizy on its nosological classification (Carbonell y Bravo 1801, pp. 71–77), which he himself presented in his 1799 doctoral thesis entitled Considérations generals sur la maniere dagger du calorique dans l'économie animale (Carbonell y Bravo 1805a). Consequently, based on Lair's hypothesis (1800), he attributed the cause to the existence of an immediate fire, the chronic consumption of alcohol and its greater frequency in older women. This work by the Catalan author, originally written in Latin, was translated in 1805 by the physician Antonio Vilaseca y Augé, and his hypothesis was included in the Spanish medical literature, where he classified SHC among the "hydro-carbonaceous"

diseases using an argument of a moral, ideological and political nature (Carbonell y Bravo 1805b, pp. 61–65).

Two years later, the magazine Minerva or El Revisor General, also edited by the Mercian Pedro María de Olive, reported on the work of Charles Chrétien Henri Marc, Doctor of Medicine and archivist of the Medical Society of Emulation of Paris. According to this author, the causal explanation for SHC should include the simultaneous concurrence of a weakness of the lymphatic system, together with the presence of inflammable gases of alcoholic origin, which would accumulate in the cellular tissues of the victims, and a pathological idio-electric state in those affected (Marc 1807a, 1807b). Marc's approaches were later supported by a specific treatise dedicated to SHC written by Johann Heinrich Koop of Hanau (Koop 1811).

Some references, together with the 1817 dissertation presented to the Madrid Academy of Medicine by Jean Leymerie (1820), a former chief physician at the Paris Hospital of the South and a physician to the American delegation in the capital of Spain, endorsed the theories supporting the reality of SHC (Marc 1807a, 1807b; Koop 1811) and caloric's role in its production. These references provided a physio-pathological argument for the existence of this nosological entity among Spanish medical professionals (Jean Leymerie 1820).

Shortly after its organic foundation, SHC became a legal consideration as a possible cause of death. Thus, the 1819 Spanish translation of the work by Jean-Jacques Belloc (1800), a pioneer of forensic medicine in France, by the Motril journalist and translator Francisco Javier de Burgos Olmo (Belloc 1819, pp. 176–80) can be considered a starting point in this regard, even providing readers with a specific format of a death certificate for this specific circumstance:

> Certification of a case of human combustion, D.F. de tal etc., I certify, that by virtue of such a thing I have recognized Dona F. de tal, who has been found burnt in her house, and in the recognition I have observed the following. The corpse had its head resting on one of the sides of the chimney eighteen inches from the fire; the rest of the body was obliquely in front of the chimney, all converted into a mass of ashes. Even the most solid bones had lost their form and consistency, and none of them could be recognized, except the coronal, the two parietal, two lumbar vertebrae, a portion of the tibia and another of the scapula, and even these were so charred as to be reduced to powder by the slightest pressure. The right foot was whole, and swollen at the joint of the upper part, and the left was more burnt. Although it was cold, there were but two small pieces of wood about an inch in diameter, burnt in the middle, and not a piece of furniture in the room, nor was the chair in which Dona F. seemed to have been sitting, and which I found about a foot away from her corpse. I must observe that Dona F. was very fat, that she was in her sixties and very fond of wine and liquors: that on the very day of her death she had drunk three bottles of wine, and half a litre of "aguardiente" (spirit or brandy); and that finally the corpse had been consumed in less than seven hours, although according to appearances nothing was burnt around the body but the clothes (Belloc 1819, p. 179).[9]

These approaches can be verified in professional publications of the time, such as a medical science dictionary printed in Madrid in 1822, where reference is made to the physician who must verify the death of a victim of accidental or spontaneous combustion (Diccionario de Ciencias Médicas 1822, pp. 201–2), or in the Diario General de las Ciencias Médicas published in 1827 in Barcelona by Pedro Felipe Monlau y Roca, a doctor of Medicine and Surgery and one of the fathers of Spanish hygienism (Monlau y Roca 1827, pp. 213–18). Along the same lines is the notable work published in Zaragoza by the Aragonese Pedro Miguel de Peiró Rodrigo and José Rodrigo Martínez, entitled Elementos

de medicina y cirugía legal, arreglados a la legislación Española (Peiró Rodrigo and Rodrigo Martínez 1832). In this work, the two authors, one a lawyer and one a physician, reaffirmed not only the medical but also the legal value of SHC and the importance of its diagnosis as opposed to other combustion types that, while affecting human beings, could be due to other different causes.

A totally contrary position would later be expressed by Antonio Coca y Cirera, a professor of Medical Clinic at the Faculty of Medicine of Granada, in a speech read on 7 May 1859, at the Academy of Sciences and Literature of the Lyceum of the Andalusian capital, where he refuted the existence of this nosological entity and argued that it should not be included among the issues of legal medicine (Coca 1860, p. 310). Coca's position on SHC, already in its rejection phase, in contrast to that of Peiró Rodrigo and Rodrigo Martínez, allows us to verify and understand the changing relationships between science, medicine and law, as well as the evolution of academic disciplines (Watson 2011; Burney and Hamlin 2019).

In this way, the works of the time highlight the human, moral and ethical values of the society of the time. Specifically, they generally support the idea that alcohol consumption and degenerative processes are factors that accelerate the internal transformations that lead to SHC. For this reason, below we present a significant selection regarding this narrative.

On 16 January 1830, in the Semanario Instructivo o Miscellanea de Ciencias, Artes y Literatura, a publication from Cádiz, the Compostelan physician and homeopath José María Gil Rey published and validated Jean-Sébastien-Eugène Julia de Fontenelle's (1828) hypothesis, which identified the production and accumulation of organic gases and the presence of idioelectricity, bioelectricity and static electricity in living beings as possible causes for the ignition of clothes and spontaneous human combustion. Gil Rey wrote:

> we regard these spontaneous human combustions as intimate and spontaneous reactions due to new products, arising from a degeneration of the muscles, sinews, viscera, etc., and which are not dependent on the influence of external agents, etc. Bringing together the products presented the same phenomenon of the combustion, without depending in any way on the influence of external agents, either by admitting the effects of the opposite electricity of Berzelio, or by exciting the inflammation of hydrogen by its contact with chlorine, arsenic, or powdered antimony, enveloped in the latter gas, etc. or this last result, adds Mr. Julia Fontanelle, we think that in some individuals, mainly women, there is a particular diasthesis, which, together with the asthenia caused by age, an inactive life and the abuse of spirits, may produce spontaneous combustion; but we are far from considering alcohol, hydrogen or an overabundance of fat as the material cause of combustion. If alcohol has any part in this affection, it is only by promoting the aforesaid causes and producing the degenerescence, of which we have spoken, which engenders new and highly combustible products, the reaction of which causes the combustion of the body (Gil Rey 1830, pp. 19–20).[10]

Along the same lines, in his work of 1838, Joaquín Escriche Martín, a lawyer and liberal from Teruel, stressed its legal reality and unclear etiology, indicating that it occurred more frequently among "those who have made excessive use of strong liquors than in those who have lived temperately" (Escriche 1838, p. 698). This publication reported the first documented case of SHC in Spain, specifically in the municipality of Cadier in the Alpujarra of Granada. In early November 1837, it affected a young girl between 16 and 18 years of age. This case, on which we have not been able to obtain more news, is an atypical incident if we consider the age of the victim and the lack of distinctive peculiarities that surround this type of event.

Likewise, in the Folletín Científico Artístico y Literario de la Gaceta de los Tribunales, a journal where criminal events were narrated, a couple of installments on SHC were published in 1841, explaining its nosology and etiology and the role of the physician when lifting the corpse. The work appears under the signature Temperance Journal and is therefore aligned with the social temperance movements:

> Human combustion becomes rarer every day; and it may be that the time is not far distant when, thanks to the well-being and morality which the masses are enjoying, the grossest vices will disappear, and this horrible way of ending people's life will be known only among historical facts (Tempérance Journal 1841, p. 347).[11]

At that time, the opinion on the etiology of this phenomenon was diverse in Spain; however, the relationship established between it and factors related to alcohol consumption and temperance was regularly observed. In 1836, an anonymous article was published in the *Semanario Pintoresco Español* supporting this hypothesis, providing historical data and a contemporary case about a Mexican miner (Semanario Pintoresco Español 1836, pp. 150–51):

> It is not strange to hear it said that those persons who have used strong liquors excessively have made an ember of the interior of their bodies. In fact, their muscles and flesh-soaked alcohol can become combustible like a wick soaked in wine, and ignite spontaneously or by the contact of fire. There are many examples of this phenomenon, the cause of which is hydrogen ignited by liquids (Semanario Pintoresco Español 1836, p. 150).[12]

In 1837, the same newspaper, then under the editorship of the Madrid writer and journalist Ramón de Mesonero Ramos, continued to support the importance of alcohol consumption in most cases of SHC:

> This burning of the human body occurs almost exclusively in individuals who have been long given to the excessive use of spirits: these drunkards, steeped in spirit, suddenly burst into flames and are consumed, and the flame that devours them cannot be extinguished (Semanario Pintoresco Español 1837, p. 173).[13]

Nevertheless, in that article, it was admitted that the proposed explanations for the spontaneity of the phenomenon had not really been unanimously accepted in the scientific and medical world, and an external source of ignition was invariably needed (Semanario Pintoresco Español 1837, pp. 173–74).

The diversity of opinions is reflected in writings such as those of the phrenologist Antonio José Velasco, the director of El Guadalhorce and president of the Instituto Médico Malagueño, who published an article in the Boletín de Medicina, Cirugía y Farmacia (Velasco 1837, p. 190), in which he supported Jean-Sébastien-Eugène Julia de Fontenelle's (1828) hypothesis. Likewise, in *El Museo de Familias*, the Barcelona physician Pedro Felipe Monlau y Roca, while acknowledging the spontaneity of the phenomenon and its greater frequency in alcoholic women over 60 years of age affected by obesity or extreme frailty, was in favor of the existence of a morbid predisposition or an "important modification in the economy" present only in certain subjects (Monlau y Roca 1839). This hypothesis was defended in 1823 by Giovanni Battista Grabner-Maraschin, whose work was published in the Diario general de las ciencias médicas, ó Colección periódica de noticias y discursos relativos á la medicina y ciencias auxiliares (Grabner-Maraschin 1829), a scientific periodical edited at different times by the physicians Pedro Felipe Monlau y Roca, Jaime Monlau España and Wencelslao Picas. This opinion was shared by Manuel José de Porto y Cepillo, a professor of Physiology, Hygiene, General Pathology and Pathological Anatomy of the National College of Medicine and Surgery of Cadiz, who, in a dissertation before the

Medical-Surgical Academy of Cadiz, also defended the same theory as the most probable cause of SHC (Porto 1840). This assumption attributed the origin of SHC to an accumulation of caloric in certain individuals due to the condition of the solids and liquids of their respective economies, which, in the face of a fever or "preternatural" heat, would be predisposed to its development.

### *3.3. Disapproval Phase*

The third phase—disapproval—on the spontaneous character of certain human combustion events began, as in the rest of the European continent, approximately in the middle of the 19th century. It specifically began in 1842 with the Spanish translation of the 1836 writing of the Gallic dermatologist Marie-Guillaume-Alphonse Devergie (1836) by Felipe Losada Somoza (Devergie 1842), a professor of medicine and surgery in Madrid. It would be the first work published in Spanish where the spontaneous character of human combustion was questioned. Devergie's argument was based on the approaches of Gilbert Breschet, a professor of anatomy at the Faculty of Medicine of Paris (Breschet 1822), and the Gallic pathologist and surgeon Guillaume Dupuytren (1830):

> Here is how things usually happen: A woman goes home after having taken a larger or smaller dose of spirituous liquors; it is cold and to resist the rigor of the season she lights a little fire. She sits on a chair, placing a brazier under her feet. To the coma produced by the spirits is added the asphyxia caused by the stench of the charcoal. She sets fire to her clothes, and in this state the pain is converted into an incomplete insensibility; the fire makes progress, the clothes are burnt and consumed; soon the skin is burnt, the charred epidermis cracks, the fat melts and flows out; some of it forms streams on the stonework and the rest serves to maintain the combustion; it works by producing the coma and not by forming a pretended amalgam with our tissues (Devergie 1842, pp. 614–15).[14]

This last contribution was undoubtedly relevant in clarifying the etiology of SHC and where the theory of the candle or wick effect to explain its cause was presented with great care and for the first time in Spain. It contrasts with the translation in the same year of the Internal Pathology of Joseph Frank (1822) by Francisco Álvarez, Mariano Vela and José Rodrigo (Frank 1842, pp. 263–67), professors of medicine and surgery; in volume V, when referring to SHC, they attributed its cause to phosphorous or sulphurated hydrogen naturally present in the organism and to the simultaneous competition of an external source of ignition or bioelectricity. This was likewise the case with the contribution made in 1844 by Manuel Sarrais Bonafós, a deputy chief consultant of the Military Hospital of Madrid and senior doctor of the army, who, in his Spanish translation of the work of Henri-Louis Bayard (1843, pp. 85–86), the pioneer of European forensic medicine, persisted in the commonly accepted opinion that SHC was due to the "prolonged use of alcoholic beverages and their absorption by the tissues" (Bayard 1844, p. 82).

Three years later, Ramón Ferrer y Garcés, a professor of Legal Medicine, Toxicology and Public Hygiene at the Faculty of Medicine of Barcelona, established the differences between so-called "spontaneous" and "ordinary or common" human combustion (Ferrer y Garcés 1847, pp. 296–307). In this paper, he also stated his opposition to the alcoholic etiology of SHC, showing himself in favor, on the one hand, of the hypothesis defended in 1823 by Grabner-Maraschin (1823) on the existence of a particular disposition of affected individuals and, on the other hand, of Jean-Sébastien-Eugène Julia de Fontenelle's (1828) theory of inflammable organic gases as the basis for this.

In short, from the middle of the nineteenth century onwards, some Spanish physicians began to discuss, albeit timidly, the reality of the spontaneous nature of these combustions and began to search for a plausible explanation for this supposed phenomenology. Among

these, apart from the aforementioned Felipe Losada Somoza, we highlight Enrique Ataide Ureña, a librarian in charge of the subject of Legal Medicine in the Faculty of Medicine of Madrid who, in 1847, in the Spanish translation (Orfila 1847a, pp. 549–53) of the fourth edition of Mateo Orfila's Traité de Médecine Légale (see Orfila 1823; Orfila 1847b), tried to explain as impartially as possible the nature of SHC without ruling out the existence, in all cases described until then, of an external source of heat or ignition. However, based on the hypotheses of Marc (1807b), Koop (1811) and Le Cat (1813), he also supported its origin in "a particular electrical state, the presence of an alcoholic liquor or that of an inflammable gas in our organs and particularly in the subcutaneous cellular tissue and a notable quantity of fat in the adipose system" (Orfila 1847a, p. 552).

There was also incipient activity in this regard at the regional level, as evidenced, for example, by the 1850 advertisement published in El Diario Constitucional de Palma de Mallorca edited by Felipe Guasp y Pascual, regent of the Imprenta Nacional, about a convocation of the Academia Quirúrgica Mallorquina to discuss a report on SHC in its literary meetings (Diario Constitucional de Palma de Mallorca 1850, p. 4).

It is important to note that, years later, the second documented case of SHC was published in Spain, specifically in the Boletín de Medicina, Cirugía y Farmacia (1853). The case occurred in a farmhouse of Asquerosa, located in the municipality of Pinos Puente (Granada), and affected a woman who was about 40–45 years of age and addicted to aguardiente.

Coinciding with this fact, a clear dual current of opinion would be generated in the Peninsula about the spontaneous or artificial nature of SHC, which divided theorists into the so-called "combustionists" and "anti-combustionists", as is recorded in the professional dictionary written in 1853 by José Gonzalo de las Casas y Quijano, the dean of the Territorial College of Notaries in Madrid (Gonzalo de las Casas 1853). This author, without denying the influence of alcohol consumption, pointed out that not all victims of SHC abused liquor:

> The authors are not in agreement as to the occasional cause of this phenomenon. According to some, it cannot exist without contact between the animal body and an igniting matter [. . .]; this opinion is based on the fact that, in the greatest number of authentic examples of spontaneous combustion collected up to the present day, mention has constantly been made of an ignited body, and that it has usually occurred in winter, a time when it is generally closer to these bodies. It is known, say these authors, that thick individuals burn more rapidly than thin ones; and as old women are generally thicker than men, it is natural that the contact of an igniting body should easily determine the combustion of which I speak, the more so, since, if it is true that drunkenness is rarer in women than in men, it is no less true that when they indulge in excesses of this kind, it is a continuance of which few examples are seen in men. On the other hand, Lecat, Koop and Marc do not admit the necessity of an igniting body; do we not see, they say, organic and inorganic matter spontaneously igniting in the bosom of the earth or on its surface, sometimes consuming itself? Are not electric sparks produced by rubbing the arms or legs of certain individuals?
>
> Why then should we not admit that, in order to provoke and maintain this combustion, it is sufficient that the following three circumstances be met: a particular electrical state; the presence of an alcoholic liquor or that of an inflammable gas in the subcutaneous cellular tissue; and considerable quantity of fat in the adipose system? It is true that an igniting body has always been found near the remains of the individual; but it is equally well approved that not all the victims of this accident abuse alcoholic liquors; that in many cases, the atmosphere did not appear to be overcharged with electricity at the moment of combustion, and

> that it would have been difficult to prove that the phenomenon depended on an electrical state of the victim (Gonzalo de las Casas 1853, p. 11).[15]

Prominent figures in nineteenth-century Spanish medicine participated in this discussion. One such figure was Pedro Mata Fontanet, a professor of Legal Medicine and Toxicology at the Faculty of Medicine in Madrid and a pioneer of Forensic Medicine in Spain. In 1857, he denied the "spontaneous" nature of the phenomenon, meaning its occurrence without prior contact with an ignited body (Mata 1857, pp. 442–50). His disciple and successor in the chair, Ignacio Valentí y Vivó (1873), a future professor of Legal Medicine, Toxicology and Public Hygiene in Barcelona and a former student of Juan Magaz y Jaime, was, in 1873, in favor of the theory—based on organic chemistry—of "autopyria" or "human flagration", presumed to be determined by a morbid predisposition present in certain subjects, and the role of chronic alcoholism in its origin (Ignacio Valentí y Vivó 1873, pp. 83–88). In other words, Valentí y Vivó justified the causal origin and existence of SHC based on the 1860 theory of Ludger Lallemand, Maurice Constantin Perrin and Jean Louis Prosper Duroy (Lallemand et al. 1860, pp. 199–203), supported by the concept of "piarrehmia" (alcoholic hyperlipidemia), which Huss (1852) described as an alcohol use disorder.

In this regard, it is worth remembering that his professor Juan Magaz y Jaime, a physician from Zaragoza and a professor of Physics and Medical Chemistry in Barcelona between 1851 and 1859, published the Tratado elemental de Fisiología humana (Magaz y Jaime 1869) in 1869, where he defended the alcoholic etiology of SHC and the role of phosphorescence in its production. This last point was supported by studies in 1809 by the French physician Victor Dessaignes (1809) and in 1821 by Julie Macaire (1821):

> would it be so difficult for alcohol, composed of carbon, hydrogen and oxygen, to form gaseous combinations in the organization, hydrogen carbides, for example, which, being eliminated through the pores of the skin, would burn on coming into contact with an igniting body, as hydrogen bicarbonate or lighting gas burns by applying the light of a match to the burner from which it is emitted? [...] There are many vital manifestations whose nature we still do not know, and without going any further, the production of light by some animals is in this case, although it is a completely physiological phenomenon (Magaz y Jaime 1869, pp. 304–5).[16]

In this context, in 1857, the Lleida-born Magín Bonet y Bonfill, a professor of Chemistry at the Royal Industrial Institute of Madrid, published an extensive study on this subject, in which he discussed and experimentally rejected the spontaneous nature of the phenomenon (Bonet y Bonfill 1857). Likewise, as we have already pointed out, Antonio Coca rejected both the existence of SHC and its study from the medico-legal point of view (Coca 1860, p. 310).

Practically at the same time, Miguel de la Plata Marcos and Joaquín González-Hidalgo Rodríguez (Béclard 1860, pp. 335–36), boarding students at the Faculty of Medicine of Madrid, published a translation of the Traité élémentaire de Physiologie humaine comprenant les principales notions de la Physiologie comparée par J. Béclard (1855, pp. 339–40), where, given the homeothermic nature of the human being, they likewise denied the spontaneous nature of these combustions, linking their occurrence, in all cases, to an external ignition source, to the role of body fat in their development and to the chronic consumption of alcohol.

A few years later, in 1875, the Spanish translation of Alfred Becquerel's (1851, p. 471) Traité élémentaire d'Hygiène privée et publique was published by Joaquín Olmedilla y Puig (Becquerel 1875, p. 588), a physician, pharmacist and academic correspondent of the

Academy of Medicine of Madrid, where the medical–legal discussions in Germany about SHC are collected, with the conclusion that it is probably imaginary:

> Spontaneous human combustion is a subject which has long occupied the attention of physicians, and which, however, is far from being solved.
>
> It was not so long ago that the existence of spontaneous combustion was doubted by no one, and the possibility was admitted that individuals given to alcoholic beverages would spontaneously ignite, so that they could be totally consumed in the space of a few minutes.
>
> Later, this belief was changed, and while admitting the possibility of human combustion, the intervention of a body or of an ignition source was considered necessary to produce such an effect. At the same time, the inflammation of the alcoholic vapors, which are part of the pulmonary exhalation of individuals given to spirituous beverages, was admitted as one of the means of human combustion.
>
> Spontaneous combustion having been generally admitted in recent times, it was once again challenged in the medico-legal discussions in Germany with a motive of a famous process (Annals of hygiene, first series, t. XLIV, pp. 191, 363, 1850, and t. X LV, p. 99, 1859: murder of the Countess of Gorlitz). Result of these doings and the discussions to which they had a motive, that the existence of the spontaneous combustion is probably an imaginary thing (Becquerel 1875, p. 588).[17]

In 1876, Vicente Peset y Cervera, before taking the chair of Therapeutics at the Faculty of Medicine of Valencia, published an exhaustive and profound analysis of this subject (Peset y Cervera 1876). This work, coinciding with the translation of Becquerel's work by Olmedilla, describes the spontaneous nature of human combustion as irrational. It is important to note that this was a time when medicine and law were conditioned by changes in the disciplines involved in medico-legal matters and by the way in which witness and expert evidence was assessed:

> These reflections have long given us the idea of studying in depth the human combustion, called, and without reason, spontaneous; therefore, in a series of articles, we intend to make known to our readers the work done on this important subject by distinguished national and foreign doctors, pointing out a new course for forensic medicine, looking at this matter through the prism of reality and with an impartial criterion, and not as it has been up to now (Peset y Cervera 1876, p. 328).[18]

In summary, Cervera provided arguments to demonstrate that this nosological entity, like all other human combustions, was subject to known physicochemical laws and medico-legal causes:

> A thorough knowledge of the nature of human combustion, which, like all combustion, is subject to physical and chemical laws, will go a long way towards the discovery of certain criminal schemes, both homicidal and suicidal [. . .] Human combustion must be divided, legally considered, into casual, that is, that which takes place when an individual loses consciousness and sets fire to his clothes and is reduced to ashes, without him being able to call for help, or when he dies as a result of a fire: and criminal, which takes place either when an individual attempts against his life by throwing himself into a bonfire, oven, etc. or when he is killed by a fire, which will be called voluntary, or when he is burned by another evildoer, in which case it should be called involuntary. A logical division which it will not be difficult to admit, since it is known that not all individuals die of

> misfortune, of accidental burning: there are many who attempt against their lives or who die at the hands of merciless executioners (Peset y Cervera 1876, p. 471).[19]

We must add that the author's intentionality transcends the concept of SHC and its alcoholic etiology. However, he focuses his discourse on his position against alcohol abuse, explicitly and emphatically advocating the virtue of temperance:

> Two words and we will end for the day. In the course of these articles, it may be noticed that we have attacked alcohol, denying it the great importance which the ancient physicians, and not a few modern ones, having given it, as the determining cause of complete human combustion; but although we understand and think we can prove that this singular phenomenon can be explained without making it enter into reaction, and considering it only as a means of producing coma and anesthesia, and determining a true narcotism, we know perfectly well also, that it is the most common cause among us, since its abuse is so deep-rooted.
>
> It will, therefore, come as no surprise to anyone that we conclude this untidy article by advising moderation in the use of spirits, since their abuse is perhaps the cruelest and most permanent cause of all sorts of diseases. From the death records of Switzerland and the United States of America, some medical statesmen have deduced that in those countries, and among the working classes principally, drunkenness causes (directly and indirectly), many more deaths than all other diseases combined. Avoiding, therefore, the abuses which are always pernicious, let us drink fermented liquids, if we wish to obtain the many good effects which are obtained by their use, and avoid that long list of diseases and various accidents which the vice of drunkenness brings with it. Will our words echo: "Deceitful illusions, as light as pleasure"?
>
> However, we will never tire of repeating with Brillat-Savarin that he who gets drunk does not know how to drink, and that sobriety and temperance are perhaps the wisest doctors that can be given (Peset y Cervera 1876, p. 329).[20]

It should be added that, in spite of these contributions about SHC in nineteenth-century Spain, the local discussion between combustionists and anti-combustionists would still take decades to resolve. This is shown, for example, by the 1863 publication of Antonio Blanco Fernández, a Doctor of Medicine and Surgery and a professor of Phytotechnics at the Escuela Superior de Ingenieros Agrónomos of Madrid, who, in 1863, continued to support its alcoholic etiology (Blanco Fernández 1863, p. 101). Likewise, a noteworthy article was published on 9 March 1879, in El Siglo Médico by a reputed doctor from Teruel, Lorenzo López Sañudo, who, in 1896, became an elected member of the Royal Academy of Medicine of Zaragoza. His work is based on a record of statistically analyzed cases, where he emphasizes, among other factors, its lower frequency in men than in women (4 out of 20) and that "the abuse of alcoholic beverages and phosphorous alcohol baths are hygienic habits that predispose to combustion" (López Sañudo 1879, p. 150). Consistent with the ideas of Magaz y Jaime (1869), he concludes that "spontaneous combustion exists, spontaneous combustion is a fact" (López Sañudo 1879, p. 151). Likewise, the continuity of the theme is also reflected in the cultural press of the time, where renowned scientists, doctors and writers wrote, allowing the identification of values that were being transmitted to society by authorities. On August 1, 1885, in the magazine of Catholic and Carlist tradition La Hormiga de Oro (1884–1936), a note was published that tried to answer the question, "What about spontaneous combustion?" In the answer, one can recognize many of the approaches mentioned above, with a special emphasis on alcohol consumption:

> It is the incineration of the human body caused by the abuse of alcoholic beverages, which saturate the tissues, entering into combustion by the presence

> of an oxidizing body, or, according to others. of the electric spark. It is a rare phenomenon, although horrible, but is beyond all doubt by authentic examples. These phenomena have been verified in persons over sixty years of age, and more in women than men, more in the very thick and very thin than in those of medium corpulence, and more in those who have made use of liquors than those in who have lived temperately: they are less rare in winter than in summer, and more frequent in the northern countries, where aguardiente is abused: they unravel and consume the body in a few hours without contact with anybody in ignition. They say that they have seen it, they run for the blue and light body with water; that always the trunk and entrails are always burnt, leaving the hands and feet free, and that the residue of the burnt parts consists of a brittle charcoal and a small quantity of ashes, or a greasy deposit with an empyreumatic and unpleasant odor. Spontaneous human combustion is extremely easy to distinguish from that produced from fire, and, in short, if it were caused by drunkenness, as they explain, it would consist in the fact that spirits contain a large quantity of alcohol, as we have already said (FJP 1885, pp. 487–88).[21]

Finally, in 1887, in the Periodicals section of the Revista de Medicina y Cirugía Prácticas directed by Rafael Ulecia Cardona, a precursor to modern childcare, we have located what is probably one of the last cases of SHC reported in the Spanish medical press of the 19th century (Ulecia Cardona 1887). The event was originally described in the journal La Clínica de Granada as a case of SHC, diagnosed by the physician Manuel Sánchez Sánchez when performing an autopsy on a 50-year-old alcoholic and obese innkeeper.

## 4. Conclusions

A general assessment of the world literature on SHC in the 18th and 19th centuries reveals two aspects. On the one hand, no rigorous research was conducted on the real circumstances surrounding most of the cases documented, with many of them based on second- or third-hand testimonies. Similarly, some recorded summaries lack basic historical or chronological data about the event, such as the name of the victim or the exact date of the incident. Many of them can identify an external source of heat or ignition that went unnoticed. Thus, practically all of them could be explained by the hypothesis proposed by Dupuytren in 1830; according to which the victim's clothing, when impregnated with human fat, would function as if it were the wick of a candle.

Given the lack of historiographic studies on this subject in Spain, our work identifies the primary sources and the people involved in the construction and deconstruction of SHC as a medical–legal entity. From this identification, it becomes clear that this is a multifaceted topic in which the social and cultural history of various academic disciplines and elements external to them converge. It is worth noting first that the eighteenth century witnessed the critical analysis of ignorance and the genesis of a theoretical framework. In Spain, differences from other countries were driven primarily by Feijoo's philosophical project to combat superstitions and by his critical vision with respect to health and medicine. The absence of scientific controversies in the expository stage of the phenomenon was marked by Feijoo's ideas. These ideas, supported by the interests of enlightened despotism, represent a hegemonic response accrediting the model of modern science. Later, disputes among Spanish physicians of the 19th century—initially very discreet—were stimulated by the work of Ignacio María Ruiz de Luzuriaga, who disseminated the approaches of Stahl and Priestley, as opposed to those of Lavoisier, providing a theoretical framework for discussion.

In the 19th century, the means of transmission of the SHC phenomenon was the letter to the editor, the review and the reply in journalistic forums, among which Carbonell y

Bravo's letter to the editor of the journal Efemérides de España stands out. These writings presented the synthesis of works, documented cases and reasoned arguments by well-trained intellectuals, whose ideas were creating a state of opinion. The discussions on the cause of death were based on the existence (or lack thereof) of an external source of ignition. At first, it was considered relevant to study SHC from the medico-legal point of view, and related events are included in both the medical and scientific press, as well as in the cultural press and that related to the activity of the courts of justice. Subsequently, the medical class would reject its existence and its role in medico-legal cases, although its narrative constituted an opportunity to advocate temperance, lifestyle, values and a way of understanding or practicing medicine. The documented studies were included in a number of periodicals of the time, such as the Diario general de las ciencias médicas o Colección periódica de noticias y discursos relativos á la medicina y ciencias auxiliares, Correo de Sevilla, Minerva or El Revisor General, Semanario Pintoresco Español, Semanario Instructivo or Miscelánea de Ciencias, Artes y Literatura, Boletín de Medicina, Cirugía y Farmacia and El Siglo Médico. Translations played a significant role in defining the Spanish context, since the works were adapted and supplemented. To all this must be added the dissertations debated at the Academy of Medicine of Madrid, the Surgical Academy of Majorca, the Medical-Surgical Academy of Cadiz and the Academy of Sciences and Literature of the Lyceum of Granada.

It is interesting that the ideas focused—strictly in principle—on the spontaneity of combustion would be disposed towards considerations of the existence or lack thereof of an external source of ignition, adding other types of elements unrelated to the phenomenon itself.

Power relations marked the positions of physicians and scientists of the time, where moral, ideological and political issues are prominent. As a result, the ideas related to the virtues of temperance gained strength even when the need for an external source of ignition was admitted. Consequently, the axiom of the scientific world around being "old, obese and alcoholic" is shared by those who acknowledge both external and internal causes for the phenomenon, where the voices of greater academic power and prestige have an impact on these factors. In fact, it was not until the 19th century that beliefs linking alcoholism to the virtue of temperance were developed. However, during conceptual disapproval, discourse arose whose purpose was not the gnoseological deconstruction but a behavioral change in the face of alcohol consumption. There are also other associated factors that, although not so pronounced, are regularly repeated, such as obesity, advanced age and the fact that it affects women. In addition, the dissemination of science in cultural environments repeats the same structure, transferring this type of code.

These recurrent social factors allow us to understand why the concept of SHC is not reduced to a dichotomy between its rationality or irrationality, but rather the discussion shifts to the external or internal origin of the source of ignition and gradually towards moderation in alcohol consumption as a preventive health measure, which subtly points to the hygienism of the late 19th and early 20th centuries.

We would like to highlight the usefulness of the Spanish historiographic sources identified in our study for similar research. In fact, their study allows us to verify and recognize the influence of social problems in the construction and deconstruction of science from a multidisciplinary perspective. In this sense, the eighteenth and nineteenth centuries constitute a rich period for critical studies on ignorance, decadence and forms of medical thought around alcoholism, the theory of degeneration and gender prejudice. So, concepts that, when taken out of context, would seem illogical or strange can be explored from the particularities of Spain in very diverse scientific disciplines, such as hygienism, forensic practice, criminalistics, psychiatry or the anthropology of death, to find explanations in the

social and cultural contexts of the time. In fact, once the existence of SHC and its role in medico-legal causes were rejected, its narrative could serve to promote temperance, lifestyle, values and a way of understanding or practicing medicine as a response to social changes.

Finally, we emphasize that this is a multifaceted issue that brings together historical, social, and cultural knowledge from different academic disciplines and other elements. Therefore, could this topic open new lines of research and generate original and innovative knowledge? We believe so, as it allows for very broad inquiries that go beyond the topic itself and can address the role of institutions and power groups in the construction of knowledge and the evolution of scientific ideas. In this respect, it is important to recognize that the subject matter we have explored goes beyond its own limits.

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## Notes

1 See, for example, The Lancet (1828a, 1828b, 1831, 1857), J. Mackenzie Booth (1888) and Provincial Medical and Surgical Journal (1847).

2 Literal extract in Spanish: “Más admirable es averse visto salir llamas del Estomago por la voca en muchos que han bebido gran cantidad de aguardiente: assi lo viò Vulpacio, y lo testifica Bartolino. Tambien se ha visto en los cadáveres, abierto un agugero en el Estomago, y aplicada una luz, encenderse llamas, de cuyo metheoro son la causa los vapores sulphureos, que exhalan, los quales, si dentro del estomago por alguna causa se encienden, prorrumpiendo por la voca, causan vomito ígneo, como se ha solido observar”.

3 Verbatim quote in Spanish “(. . .) Pudieron, pues, acaso los humores de la Condesa estar en tal disposición, que el baño de aguardiente pusiese la última disposición, ò fuesse con causa requerida para el incendio, haciendo lo que el eslabon en el pedernal, que sin ser herido de èl, no suelta chispas. Pero también pudo ser tal la disposición de los humores, que sin ese auxilio se encendiessen. La naturaleza, preparación, y combinación de ellos puede bastar para esto: de que nos dàn prueba curiosa algunos licores chimicos, que son fríos separados, ò cada uno de por sí, y sin más operación que la mezcla se encienden”.

4 Similarly, given its interest, we reproduce the literal fragment in Spanish in this case and in the following: “(. . .) Assi no se viò jamàs, que algun Rayo hiciesse tal efecto. Esta operación, digo, pide no solo un fuego de grande actividad, mas también detenido, estable, y no passagero, como el de el Rayo: Luego es forzoso en las circunstancias de aquel caso, que se encendiesse dentro de el cuerpo de la Condesa”.

5 “Más para el caso, en que estamos, daremos la prueba más oportuna de todas, tomada de el Phosphoro ardiente de Monsieur Kunkel. Este Phosphoro, que se forma de la orina humana, y es de una actividad prodigiosa, concluyentemente persuade, que hai en nuestros cuerpos una materia, no solo inflamable, más de tal inflamabilidad, quando se coloca debaxo de algunas particulares disposiciones, que su fuego es mucho más activo, que el fuego ordinario”.

6 “Entre los efectos admirables (dice) que de tiempo en tiempo nos representa la Naturaleza, apenas se ha visto cosa más extraña, que el funesto accidente arribado en Cesena, cuya descripción voi à hacer. Madama la Condesa Cornelia Bandi, muger de notoria piedad, y costumbres irreprehensibles, de edad de 62 años, haviendose acostado la noche del día catorce del Marzo próximo, fuè hallada por la mañana muerta, y reducida à cenizas”.

[7] "Se refiere, que una Dama de Parìs, acostumbrada de mucho tiempo à beber espíritu de vino, fuè una noche reducida à ceniza, y humo, por la llama, que salia de su cuerpo, exceptuando el cranio, y las extremidades de los dedos; lo que prueba, que el suceso de Cesena no es único en su especie, pues el de Parìs parece estàr vestido de las mismas circunstancias, esto es, el cranio, y los dedos preservados del fuego".

[8] "Muy condolido me dexa la desgracia de essa pobre Viuda, à quien, sobre el trabajo de perder una parte de su corta hacienda, se añade padecer la calumnia de que essa pérdida fuè ocasionada, y merecida como pena de un pecado suyo".

[9] "Certificación sobre un caso de combustión humana. D.F. de tal etc., certifico, que en virtud de tal cosa he reconocido a Doña F. de tal, que se ha encontrado quemada en su casa, y en el reconocimiento he observado lo que sigue. El cadáver tenía la cabeza apoyada en uno de los morillos de la chimenea a diez y ocho pulgadas del fogón; lo demás del cuerpo estaba oblicuamente delante de la chimenea, convertido todo en una masa de cenizas. Hasta los huesos más sólidos habían perdido su forma y su consistencia, y no podía reconocerse ninguno de ellos, excepto el coronal, los dos parietales, dos vertebras lumbares, una porción de la tibia y otra del omóplato, y aún estos se hallaban calcinados de modo, que se reducían a polvo con la más ligera presión. El pie derecho existía entero, e inflamado en la juntura de la parte superior, y el izquierdo estaba más quemado. Aunque hacía frío, no había más que dos pequeños pedazos de leña de una pulgada de diámetro, quemados por medio, y no lo estaba ningún mueble de la pieza, así como ni la silla en que parecía haber estado sentada la Doña F., y que encontré a un pie de distancia de su cadáver. Debo observar que la Doña F. estaba gruesísima, que tenía sesenta y tantos años, y era muy dada al vino y a los licores: que el mismo día de su muerte se había bebido tres botellas de vino, y cerca de media azumbre de aguardiente; y que en fin el cadáver se había consumido en menos de siete horas, aunque según las apariencias nada se quemó alrededor del cuerpo más que los vestidos".

[10] "[. . .] miramos estas combustiones humanas espontáneas, como reacciones íntimas y espontáneas debidas á productos nuevos, dimanados de una degenerescencia de los músculos, tendones, vísceras &c. Uniéndose los productos presentan los mismos fenómenos de la combustión, sin depender de modo alguno de la influencia de agentes exteriores, bien sea admitido los efectos de las electricidades opuestas de Berzelio, ó bien excitando la inflamación del hidrógeno por su contacto con el cloro, el arsénico, o el antimonio en polvo, envuelto en este último gas &c. Por este último resultado, añade Mr. Julia Fontenelle, pensamos que en algunos individuos, principalmente mujeres, existe una diátesis particular, la cual junta con la astenia que ocasionan la edad, una vida poco activa y el abuso de los licores espirituosos puede producir una combustion espontánea; pero estamos muy lejos de considerar como causa material, de la combustion el alcool, ni el hidrógeno, ni una superabundancia de grasa. Si el alcohol tiene alguna parte en esta afección, es solamente promoviendo las causas precitadas y produciendo la degenerescencia, de que hemos hablado, la cual engendra nuevos productos muy combustibles, cuya reacción provoca la combustion del cuerpo".

[11] "La combustion humana se hace cada dia mas rara; y puede ser que no este lejos el tiempo en que, gracias al bienestar y moralidad de que van gozando las masas, desaparezcan los vicios mas groseros y este horrible modo de terminar la vida del hombre será solamente conocido entre los hechos históricos".

[12] "No es estraño el oir decir que aquellas personas que han usado de licores fuertes con esceso tienen hecho un ascua el interior de su cuerpo. En efecto sus músculos y carnes embebidas en alcohol pueden llegarse á hacer combustibles como una mecha em-papada en espíritu de vino, é inflamarse espontáneamente ó por el contacto del fuego. Sobrados ejemplos hay de este fenómeno cuya causa es el hidrógeno puesto en ignición por los líquidos".

[13] "Este incendio del cuerpo humano casi no se verifica sino esclusivamcnte en individuos dados por mucho tiempo al uso escesivo de bebidas espirituosas: estos borrachos, empapados en espíritu, arden de repente y se consumen, sin que se pueda apagar la llama que los devora".

[14] "He aquí como deben ocurrir por común los hechos: Una mujer muger se retira á su casa después de haber tomado una dosis mayor ó menor de licores espirituosos; hace frío, y para resistir el rigor de la estación enciende un poco de fuego. Se sienta en una silla, colocando un braserillo debajo de los pies. Al coma producido por los licores espirituosos viene á agregarse la asfixia ocasionada por el tufo del carbón. Prende el fuego en los vestidos, y en este estado se convierte el dolor en una insensibilidad incompleta. El fuego hace progresos, los vestidos se queman y consumen; en seguida se quema la piel, la epidermis carbonizada se cuartea, la grasa se derrite y fluye al exterior; una parte forma arroyos en el pavimento y el resto sirve para mantener la combustión; llega el día y está todo consumido. He aquí como el alcohol ha sido la causa ocasional de la combustión; obra produciendo el coma y no formando una pretendida amalgama con nuestros tegidos".

[15] "No están acordes los autores acerca de la causa ocasional de este fenómeno. Según unos, no puede existir sin que haya contacto entre el cuerpo animal y una materia en ignición [. . .]; se funda esta opinión en que, en el mayor número de ejemplares auténticos de combustión espontánea recogidos hasta el día, se ha hecho constantemente mención de un cuerpo inflamado, y que por lo regular ha sucedido en invierno, época en que generalmente se está más próximo a estos cuerpos. Se sabe, dicen estos autores, que los individuos gruesos arden con más rapidez que los flacos; y como las mujeres ancianas son, por lo general, más gruesas que los hombres, es natural que el contacto de un cuerpo en ignición determine fácilmente la combustión de que hablo, tanto más, cuanto que sí es cierto que es más rara la embriaguez en las mujeres que en los hombres, no lo es menos que cuando ellas se entregan a excesos de este género, es con una continuación de que se ven pocos ejemplos en los hombres. En cambio, Lecat,

Koop y Marc, no admiten la necesidad de un cuerpo en ignición; ¿no vemos, dicen, materias orgánicas e inorgánicas que se inflaman espontáneamente en el seno de la tierra o en su superficie, consumiéndose a veces? ¿No se producen chispas eléctricas frotando los brazos o las piernas de ciertos individuos? Pues, ¿Por qué no hemos de admitir desde luego que, para provocar y mantener esta combustión basta que se reúnan las tres circunstancias siguientes; un estado eléctrico particular; la presencia de un licor alcohólico o la de un gas inflamable en el tejido celular subcutáneo; y una cantidad notable de grasa en el sistema adiposo? Es cierto que siempre se ha encontrado un cuerpo en ignición cerca de los restos del individuo; pero también está igualmente probado que no todas las víctimas de este accidente abusan de los licores alcohólicos; que en muchos casos, no parecía hallarse la atmósfera sobrecargada de electricidad en el momento de la combustión, y que hubiera sido difícil probar que dependía el fenómeno de una estado eléctrico de la víctima".

16 "¿sería tan difícil que el alcohol, compuesto de carbono, hidrógeno y oxígeno, formará en la organización combinaciones gaseosas, carburos de hidrógeno, por ejemplo, que eliminándose por los poros de la piel ardieran al ponerse en contacto con un cuerpo en ignición, como arde el bicarburo de hidrógeno ó gas del alumbrado aplicando la luz de una cerilla al mechero por donde se desprende? [...] Son muchas las manifestaciones vitales cuya naturaleza desconocemos todavía, y sin ir más lejos, la producción de luz por algunos animales se halla en este caso, a pesar de ser un fenómeno completamente fisiológico".

17 "La combustion humana espontánea es un asunto que ha ocupado largamente la atención de los médicos, y que, sin embargo, se halla lejos de estar resuelto. No hace todavía mucho tiempo que la existencia de la combustion espontánea no era puesta en duda por nadie, y se admitia la posibilidad de que los individuos dados a las bebidas alcohólicas se inflamen espontaneamente, de manera que pueden ser totalmente consumidos en el espacio de algunos minutos. Más tarde, esta creencia se cambió, y aun admitiendo la posibilidad de la combustion humana, se consideró como necesaria la intervención de un cuerpo ó de un foco en ignición para producir tal efecto. Al mismo tiempo se admitía como uno de los medios de la combustion humana la inflamación de los vapores alcohólicos que hacen parte de la exhalación pulmonar de los individuos dados a las bebidas espirituosas. Admitida generalmente en estos últimos tiempos la combustion espontánea, ha sido de nuevo batida en brecha en las discusiones médico-legales suscitadas hace muchos años en Alemania con motivo de un proceso célebre (Annales d'hygiene, primera série, t. XLIV, pp. 191, 363, 1850. y t. XLV. p. 99, 1859: asesinato de la condesa de Görlitz). Resulta de estos hechos y de las discusiones a que han dado motivo, que la existencia de la combustion espontánea es probablemente una cosa imaginaria".

18 "Estas reflexiones nos han sujerido hace bastante tiempo la idea de estudiar á fondo la combustion humana, llamada, y sin razon, espontanea; por lo que, en una série de artículos, pensamos dar á conocer a nustros lectores los trabajos realizados sobre tan importante materia, por distinguidos médicos nacionales y extranjeros, señalando luego un nuevo derrotero para la me-dicina forense, mirando este asunto al traves del prisma de la realidad y con un criterio imparcial, y no como hasta hoy se ha venido haciendo".

19 "Conociendo á fondo la naturaleza de la combustion humana, sujeta como todas las combustiones á las leyes físico-químicas, se habrá adelantado mucho para el descubrimiento de ciertos ardides criminales, así homicidas como suicidas [...] La combustion humana debe dividirse, legalmente considerada, en casual, ó sea aquella que se verifica cuando perdido el conocimiento de un individuo se prende fuego a sus ropas y se reduce á pavesas, sin que le sea dado el pedir auxilio, ó bien cuando muere á causa de un incendio: y criminal, que tiene lugar ora cuando atenta contra su vida lanzándose á una hoguera, horno, etc., que se llamará voluntaria, ó ya cuando es quemado por otra mano malhechora, en cuyo caso deberá llamarse involuntaria. División lógica que no costará trabajo en admitir, ya que es sabido que no todos los individuos mueren de desgracia, de incendio casual; habiendo muchos que atentan contra su vida ó que mueren en manos de verdugos despiadados".

20 "Dos palabras y terminaremos por hoy. En el trascurso de estos artículos podrá notarse que atacamos sobre manera al alcohol, negándole la gran importancia que los antiguos médicos, y no pocos modernos, le han dado, como causa determinante de la combustion humana completa; pero aunque comprendemos y pensamos demostrar que se esplica aquel fenómeno singular sin necesidad de hacerlo entrar en reaccion, y considerándole tan sólo como un medio de producir el coma y la anestesia, y de-terminar un verdadero narcotismo, sabemos perfectamente tambien, que es la causa más comun entre nosotros, ya que tan arraigado se halla su abuso. Por lo tanto, no extrañará nadie que concluyamos este desaliñado articulo aconsejando la moderacion en el uso de las bebidas espirituosas, ya que su abuso es quizá la causa más cruel y permanente de toda suerte de enfermedades. De los registros mortuorios de Suiza y de los Estados-Unidos de América, han deducido algunos médicos estadistas, que en aquellos paises y entre las clases obreras principalmente, la embriaguez causa (directa é indirectamente), muchas más defunciones que todas las demás enfermedades juntas. Evitando, pues, los abusos que son siempre perniciosos, bébanse los líquidos fermentados, si queremos obtener los muchos buenos efectos que se consiguen con su uso y evitar esa larga lista de enfermedades y accidentes diversos que acarrea el vicio de la embriaguez. ¿Harán eco nuestras palabras? "¡Ilusiones enganosas, livianas como el placer!"...Sin embargo, no nos cansaremos nunca de repetir con Brillat-Savarin que, el que se embriaga, no sabe beber y que la sobriedad y la templanza son quizá los médicos más sábios que pueden dares".

21 "Es la incineración del cuerpo humano causada por el abuso de las bebidas alcohólicas, las cuales llegan á saturar los tejidos, entrando en combustión por la presencia de un cuerpo comburente, ó, según otros, de la chispa eléctrica. Es fenómeno raro, aunque horrible, pero está fuera de toda duda por ejemplos auténticos. Hanse verificado estos fenómenos en personas de más de

60 años, y más en las mujeres que en los hombres, más en los muy gruesos y muy flacos que en los de mediana corpulencia, y más en los que han hecho uso de los licores que los que han vivido con templanza; son menos raros en invierno que en verano, y más frecuentes en los países del Norte, donde se abusa del aguardiente de semillas: que se desenvuelven y consumen el cuerpo en pocas horas sin contacto de cuerpo alguno en ignición. Dicen los que lo han visto, que corre por el cuerpo una llama azulada y ligera que no puede extinguirse con el agua; que siempre se queman el tronco y las entrañas, quedando libre las manos y los piés, y que el residuo de las partes quemadas se compone de un carbón quebradizo y de una corta cantidad de cenizas, ó un depósito grasiento con un olor empireumático y desagradable. La combustión humana espontánea es muy fácil de distinguir de la producida por el fuego, y en resumen, si se verificase por caso de embriaguez, como explican, consistiría en que las bebidas espirituosas contienen gran cantidad de alcohol, como hemos dicho, que cuenta entre sus constituyentes el hidrógeno; destruída por el exceso la fuerza vital de la persona embriagada, los agentes químicos obtienen un fuerte ascendiente y se supone que el hidrógeno del alcohol, combinándose con el fósforo del cuerpo, forma hidrógeno fosforado que se inflama espontáneamente, y propiamente hablando, consume el temple vital".

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