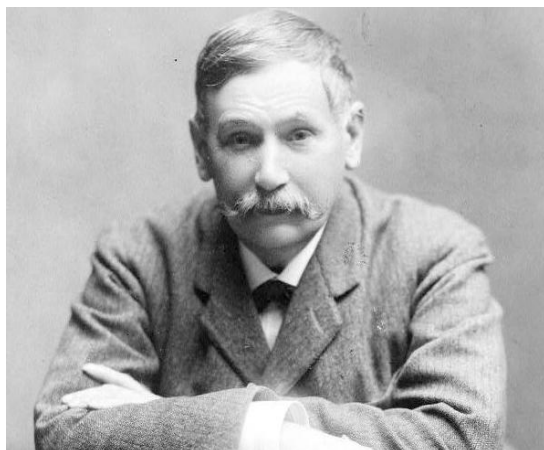


Galdós and Medicine

This is my first visit to Sheffield, though the city has always been familiar to me by name. My mother was a Lancashire Lass who worked in public health in Sheffield in the late 1930s after training as a nurse in London and often mentioned this city. She was lured south by my father, however, with the result that I was born in Exeter. Had it been otherwise, it is possible that I might have walked from a home in Sheffield today rather than travelling from the West Country.

It is easy to be overawed by the contributions of the Galdós scholars who have given the last fourteen Sheffield lectures. The justification for my presence here today can be found in the multifaceted nature of Galdós's genius. For not only was he a profound observer of Madrid's social life, but he also possessed an eye for medical anomalies unequalled by any novelist of his time. As a result, depictions of physical and mental disease are scattered throughout his novels, more than any other novelist of his time. His medical references vary from fleeting phrases to sustained quasi-clinical depictions. Assessment of such references may be easier for a Hispanist privileged to have trained in medicine.



I begin with a portrait of Galdós taken in about 1905 by Dalton Kaulak (1862-1933), a leading society photographer of his day, whose real name was Antonio Cánovas del Castillo y Vallejo, being a nephew of the Conservative statesman. It is remarkable not only as a portrait but also, perhaps, for its demonstration of the gaze that Foucault attributed to medical men, beneath whose scrutiny the secrets of body and soul were revealed (xiii-xiv). Foucault also refers to a "hearing gaze" (164) and reminds us that Galdós used other sensory modes to get to the heart of his characters. How else can we interpret his poetic hymn to breath-sounds as Moreno Rubio examines Alejandro Miquis in *El doctor Centeno*?

The sibilant and deep sounds, the echoes, the blows, quivering and resonant, diminished and indistinct, that do not resemble a corporeal voice so much as the soliloquies of the soul constituting a fascinating range of sounds. It is such a pity that the burden of this music is almost always a lament of death! To the listening doctor are conveyed the sighs of the dying.

Such a passage leaves me in no doubt that Galdós, in addition to seeing the sick, also listened to some of their chests.

Galdós was renowned for the depth of his research in topics that formed the backgrounds to his novels. One has only to think of his description of the Madrid textile trade in *Fortunata y Jacinta*, his knowledge of women's fashion in *La de Bringas* and his grasp of financial speculation in *Lo prohibido* to realise how he combines his creative vision with a detailed factual framework. What sets Galdós's interest in medicine apart, however, is not only its depth and variety but the frequency with which it appears in his novels and newspaper articles. While a detailed medical context is essential for the plots of *Marianela* and *La de Bringas*, elsewhere apparently almost incidental depictions of physical and mental conditions are apt to appear. Galdós appears to relish the introduction of medical portraits as an element of his Naturalist vision. I propose to illustrate this in the course of this lecture.

On studying medicine in Galdós's novels, I have been conscious of the counsel of Professor Geoffrey Ribbans who gave the Galdós Lecture in 1998. For in 1977, he observed, to me a little ambiguously, that, *Care must be exercised in treating characters as medical case-histories and in particular in speculating beyond what is given in the text*, while on the other he admits, *At the same time medical evidence can be very useful in elucidating, verifying or assessing the information provided* (93). With this in mind, I have chosen to examine Galdós's fictional medical creations as if they were real-life medical histories because I believe that this is what Galdós wanted me to do. After all, nothing reinforces the Realist illusion as vividly as a strong dose of contemporary fact. As Lambert observes, the celebration of Galdós's creative imagination is not an indication to undervalue the documentary naturalist elements of his work (45). Speculation beyond the terms of the text is clearly unacceptable, especially when critics are tempted to make anachronistic interpretations in the light of medical developments that occurred after Galdós wrote. My goal has been to study medical ideas circulating in Western Europe in the 1870s and 1880s for, as we shall see, Galdós not only researched these ideas for himself, but was also in a position to pick the brains of experts he made his friends.

The changes in medicine that took place in Galdós's lifetime were enormous. After his birth in 1843, the role of micro-organisms in human disease remained unsuspected until 1875, and laboratory medicine was in its infancy. The ancient idea of spontaneous generation of life was still current and the cellular basis of disease had yet to be recognized. By the time of his death in 1920, medicine had entered a recognizably modern phase with the discovery of X-rays and viruses, and the development of blood transfusion and the electrocardiogram. The organisms responsible for the great epidemic and endemic diseases: tuberculosis, typhoid, typhus, whooping cough, tetanus, diphtheria, cholera, leprosy and syphilis were all discovered during his lifetime. He was twenty-four when Lister announced his technique of surgical antisepsis with carbolic acid, which later evolved, following the contributions Lawson Tait and Richard Bergmann, into the modern practice of asepsis. The scope and safety of surgery was greatly increased by antiseptic practice, especially in conjunction with anaesthesia using chloroform or ether after the 1840s. These innovations were introduced into Spain by a new generation of surgeons, some of whom were Galdós's personal friends.

Many medical references and portraits in Galdós can be interpreted in symbolic and metaphorical terms, and such labour is most appropriately that of the literary scholar. In parallel with this, my approach has been to relate the medical representations he employs to the context of medicine in the 1870s and 1880s. While many of Galdós's sources remain a matter of speculation, his links with Tolosa Latour are documented. Examples include the letter of December 1887 referring to a failed appointment to see a case of sleepwalking, and an undated letter from the author begging the loan of book with a "succinct" description of scurvy (Schmidt 160). An undated visiting card from Tolosa promises Galdós a text of ophthalmology that he had been seeking (177).

Perhaps as significant as his informants was Galdós's possession of the three-volume translation from the French of Sigismond Jaccoud's (1830-1913) *Tratado de patología*

interna (1885). Tolosa presented Galdós with a copy of the fourth edition with a dedicatory inscription. Though the text includes much morbid pathology, as its title suggests, it is also a rich source of information on the clinical presentation and treatment of disease, and of the medical literature of the time. We know from Schmidt's edition of the Galdós-Tolosa correspondence that this book was in Galdós's possession from an undated letter from Tolosa begging to borrow it (167). It is presumably the copy now archived in the *Casa-Museo* in Las Palmas. In that text, Galdós had to hand an up-to-date account of the medicine of his day, dating from the 7th French edition of 1882. Inspection of its pages on diphtheria, angina maligna, tetanus, typhus and GPI, for example, reveals close correspondences with depictions in the novels.

I begin with a number of fleeting references, proceed to more sustained depictions in secondary characters, and finally deal with lengthier portrayals in primary figures found in the novels written between 1878 and 1891.

Fleeting medical references

Though they may be brief and easily missed, these fleeting references, may derive from a detailed medical context. I am reminded of James Whiston's comment, in his Sheffield lecture in a different context, about the "extraordinarily creative throwaway lines in which the works of Galdós abound."

I begin with the *cólico miserere* from which Torquemada's first wife, doña Silvia, dies mentioned at the beginning of *Torquemada en la hoguera*, which professor Nicholas Round brought to my attention. It was an out-of-date usage in Galdós's time and had been used as a catch-all term for intestinal obstruction. It has been traced to the XVI century "father of surgery," Ambrose Paré (1510-90), who referred to *Mal de miserere* in patients with intermittent abdominal pain and vomiting of intestinal contents that was almost always fatal. The grim outcome is reflected in the Latin phrase that begins the 50th psalm that was part of the liturgy of the burial of the dead (Acea 176-7). The name *cólico miserere* thus implied that it was a likely prelude to death.

Physicians were long unable to distinguish the many causes of intestinal obstruction, and it was only when autopsies became more common in the XVII and XVIII centuries that underlying pathologies began to be understood. Conditions such as appendicitis, twisting of bowel (*volvulus*), trapping of bowel in a hernia sac, narrowing of gut by tumour, and telescoping of bowel (*intussusception*) began to be identified. Thereafter the non-specific collective term, *cólico miserere*, fell into general disuse leaving Galdós to resurrect it in *Torquemada* as an archaism.

More familiar to us now are references to mastectomy exemplified by the operations of doña Lupe *la de los pavos*, in *Fortunata y Jacinta*, and María Antonia, the wife of the sword-maker Zacarías Navarro, in *Ángel Guerra*. The usual indication for this operation was for the removal of cancer and one shudders to learn that removal of the breast and underlying muscles, without anaesthetic or analgesia, had been performed in Roman times and was practised in the XVI century by Paré. In 1810, Fanny Burney (1752-1840) wrote a vivid account of her own mastectomy.

In mentioning mastectomy, Galdós was revealing his awareness of contemporary medicine. The operation had become less nightmarish and lethal in his lifetime, and more common following the introduction of anaesthesia in 1846, the advent of Lister's antiseptic surgery in 1867 and Bergmann's introduction of steam sterilization in 1886. Galdós's early years also witnessed discoveries about the nature of breast cancer that we now take for granted. It had to be learned, for instance, that breast cancer spread not by diffusion of poisonous matter, as Virchow thought, but by the metastatic migration of malignant cells (Donegan 7). In 1867

Moore in England recognized that the entire breast had to be removed rather than cutting into the tumour, while in 1875, microscopic studies by Richard Volkmann and others in Germany showed that adjacent soft tissues and lymph nodes had to be excised if all tumour cells were to be removed. Better understanding of the disease resulted in improved patient survival leading to the radical mastectomy devised by Halsted in the United States, which became the definitive operation after 1882. It may be argued that Galdós was unlikely to have heard of this in Spain, but it is tempting to point out that his surgeon friend, Enrique Diego-Madrado, studied under Volkmann in 1874-76, and had also met Pasteur and Lister (Oría 25). Madrado would have been able to tell Galdós all he wanted to know about the latest advances in antisepsis and survival after mastectomy.

Sometimes Galdós will reveal an details of his medical knowledge in the course of more extensive description of disease, where they may easily be missed. A striking example is that of José María Bueno de Guzmán in *Lo prohibido* when he suffers a stroke and finds that he cannot recognize the faces of his visiting cousins María Juana, Eloïsa and Camila. Though he has every reason to know them well and feels that he ought to recognize them, he cannot do so.

Those who have read the books of the late American neurologist Oliver Sacks will recognize this as an instance of face-blindness or *prosopagnosia*. While this rare condition is most commonly congenital, as in Dr Sacks' case, it occasionally follows a stroke. Two of the great neurologists of Galdós's day, Charcot in Paris and Hughlings Jackson in London, described acquired inability to recognize faces in association with failure to recognize other formerly familiar objects in 1883 and 1876 respectively. A description of loss of recognition restricted to the face was published by A. L. Wigan in *The Duality of Mind* in 1844. While it seems unlikely that Galdós would have been aware of these sources, my guess is that he heard about or saw an example through his medical friends. The condition is so singular that it must have piqued his interest sufficiently for him to include it, quite appropriately, in his description of the ailing *roué* of *Lo prohibido*.

On other occasions, Galdós may unobtrusively slip a surprising technical phrase into a series of medical terms when he is creating a larger quasi-clinical picture. I will return to the larger picture later, but the phrase of particular interest here is the *cortical layer* or *capa cortical* that Galdós inserts, not entirely appropriately, into Golffín's description of Pablo's congenital cataracts, *it is true that the cortical layers are very opaque...the obstruction to the [passage of] light is great.*

This reference may refer to pioneering work in brain physiology of the 1870s at the time when *Marianela* was written. Following Broca's identification of an area of the frontal cerebral cortex associated with speech in 1861, the Scottish physiologist, David Ferrier (1843-1928), published findings to suggest that important visual function in the brain was located in the cortical layer at the rear of the lateral (*parietal*) cerebral hemispheres (Fishman 174-5). Galdós's use of this unusual phrase suggests that he may have heard of Ferrier's work.

A fleeting reference, easily missed, also occurs in the course of the detailed description of Maximiliano Rubín, to whom I return later. We are told that, *Maxi was born at seven months' gestation, when he needed to be fed with a bottle and by a goat.* The actual phrase is, *Como que había nacido de siete meses y luego se le criaron con biberón y con una cabra.* Though a well-regarded translation of *Fortunata* renders this as, "he had been born at seven months and then brought up on a bottle and goat's milk" (Gullón, 228), I believe that it elides some interesting medicine and that Galdós is, in fact, referring to animal lactation, the direct suckling of an infant by an animal.

We are familiar with the legend of Romulus and Remus being suckled by a she-wolf. What may be less well known is that suckling of the human infant by the donkey or the goat survived as a rural custom as a solution to the problem of the mother who could not suckle her child and where no human wet-nurse was available. The practice was revived in Paris in the 1880s in an attempt to rescue foundlings who were dying at so a high rate that it was feared to be contributing to national demographic decline.

At that time, the survival of an infant of seven months' gestation (weighing about 1200 grams, about 38% of the weight of a term baby) was uncommon. A review of the survival of infants weighing less than 2000 grams at the *Maternité de Cochin* and the *Maternité de Paris* in 1883 found a mortality of 66%. Although the entity of prematurity was incompletely understood, Stéphane Tarnier (1828-97) was able to achieve increased survival rates in 1881 when he devised the first infant incubators, *couveuses*, which were warmed with tanks of hot water (Auvard, 1025–26). News of this advance from a major French institution must have been known to Tolosa Latour, who attended a conference in Paris in 1883 and able to share it with Galdós upon his return. A surviving infant of seven months gestation, a *sietemesino* such as Maximiliano, would thus have been of some topical interest in 1886. Of course, he would have been unlikely to have survived in the 1840s, the period assigned to his birth in the novel.

An additional factor militating against the survival of premature infants was spoilage of the milk with which they were fed. For although Pasteur had developed the technique of controlled heating followed by rapid cooling (pasteurization) in order to prevent spoilage of wine and beer in 1862, the process was not immediately applied to milk. It was not until 1886 that the German agricultural chemist, Ritter von Soxhlet (1824-1926), successfully pasteurized milk that it became safer for infant consumption (Rosenau 187).

What made the problem even worse for infants were the dilution and adulteration of milk that were universal in big cities, and were documented in Madrid in 1883 by Serrano Fatigati. The mortality of even full-term infants when fed spoiled milk from unwashed bottles in a foundlings' hospital like Madrid's *La Inclusa* could reach 85%, leading Tolosa Latour to warn that, *to tolerate the feeding bottle is to condone infanticide* (71, 88). The death rate at foundlings' hospitals led the social pioneer, Concepción Arenal (1820-93) to observe that, *...foundlings now die at such a rate that if the survival of the species were to rely upon them alone, it would become extinct* (341).

Even worse was the fact that many abandoned infants suffered from infectious diseases, most fearsomely, syphilis. In Paris syphilitic infants were traditionally suckled by wet-nurses, though this ran the risk not only of infecting the nurses, and hence other infants they suckled, but also the nurses' own families. The paediatrician, Joseph Parrot (1829-83), adopted the practice of having syphilitic infants suckled directly by a donkey or a goat, since these animals do not transmit the human disease. Parrot's results in 86 syphilitic infants at the *Hospice des Enfants Assistés* enabled him to proclaim that, *in the absence of a good wet-nurse, direct suckling directly from the teat of animals can be very useful. It is positively indicated for infant suffering from congenital syphilis* (852).

Animal lactation was similarly recommended in Spain by Tolosa Latour (68, 72–73), Monlau (523–24) and Viñeta-Bellaserra and in England by Routh (443). Viñeta cautions, however, in accord with contemporary belief that suckled milk transmitted personality characteristics to infants (lactational heredity), that they should preferably not acquire the impatient and nervous traits of the goat. Following Parisian practice, he rather recommends that infants ingest the more tranquil characteristics acquired through the milk of the donkey (27).

Galdós refers to both animal lactation and lactational heredity in *Torquemada en el purgatorio* when he has the protagonist reveal that he himself was suckled by a goat, *And [as] I had no mother, they suckled me with a goat*. In a witty play on a traditional *dicho*, his sister-in-law, Cruz, tells him that he can consequently be expected to exhibit a goat's behaviour, *iSo you will always revert to the mountain! [iPor eso siempre tira usted al monte!]*.

Medical portraits in secondary characters

Passing from the category of seemingly incidental medical references we pass to depictions in important secondary characters. An excellent example is Galdós's portrait of doña Isabel Godoy in *El doctor Centeno*.

Doña Isabel is the great aunt of Alejandro Miquis. She is obsessed with cleanliness and spends much of her time dusting and polishing her home with her maid, Teresa. We learn that, *She had a fanaticism that dominated her, that of cleanliness [...] complete cleaning [of the house] was performed daily. Doña Isabel had a maidservant [...] and between them they shared the work equally*. Doña Isabel refuses to eat food that is not cooked in the Manchegan style and that does not come from her home town of Toboso. In the matter of drink, she confines herself to herbal tea.

As a young woman she had grown up reading romantic novels that consumed her imagination, a clear novelistic nod toward Don Quijote. Disappointed in love, she becomes convinced that she is the incarnation of her dead sister, *with her spirit endlessly saturated with the memory of her sister she achieved the psychological phenomenon of transubstantiation [...] and had come to say almost without thinking: 'I am Piedad ... I am my sister ...'* In addition, she believes herself to be endowed with second sight by virtue of having been born on Holy Thursday, telling her great-nephew, *Beware, Alejandro ... do not behave badly ...remember that I was born on Holy Thursday and will be watching you constantly ...* With a wink both at the Quijote and at his own *La desheredada*, Galdós has Alejandro's father write to him with the report of a Tobosa neighbour (highly eccentric in his own right) about doña Isabel's mental health, *Don Santiago Quijano has told me that the poor thing is absolutely mad. Poor lady! Visit her and help her all you can and treat her with tact so as not to offend her*. Thus far Galdós has regaled us with an entertaining portrait of inoffensive madness. What may relate to the medical context of his time, however, is that doña Isabel has communicated her madness to her maid.

The maid, who had served [doña Isabel] for many years, was a mature woman [...] Life shared with doña Isabel had caused her to assimilate with her to an astonishing degree. First of all she adopted the scruples, then the tastes, the habits, and finally the manner of speech and even the facial expression ... Finally they were like friends between whom everything was shared, work, food, prayer and even thoughts.

The phenomenon of a previously sane person acquiring the delusions of a mad individual with whom they live in close contact had been recognized proverbially for many years. In medical science, however, it first appears under the name of *folie à deux*, in its description by Lasègue and Falret in 1877 some six years before *El doctor Centeno* was published.

They summarize *folie à deux* as occurring when two persons live in close contact for a prolonged period and share the same interests, feelings and beliefs. They describe the more intelligent, "active" person of the pair gradually imposing his or her delusions upon the weaker or more "passive" person. A characteristic of communicable delusions is that they must be more or less plausible. Though seen in both sexes, the authors found the condition more common in women.

It would appear that news of the newly described psychiatric entity spread quickly, since a reference to it, attributed to Lasègue and Legrand du Saulle, appears in Spain in Giné y Partagas' text a year before Lasègue's article. In Giné's description of varieties of monomania, he observes that,

...locura de dos had long been known, The influence of imitation has been observed on various occasions hence the proverbial saying one madman makes a hundred, which must relate to the tendency for monomania to be communicated emotionally. The madness in pairs, which Lasegue and Legrand du Saulle have described, is simply monomania that spreads to those who live in intimate contact with this type of insane patient (441).

Galdós may well have had an opportunity in everyday life to observe *folie à deux* upon which to base this wonderful picture of the mad doña Isabel and her maid. The rapid spread of knowledge of the entity to Spain, and the very precise correspondence of fictional characters with the medical description, however, suggest that Galdós may have been aware of its recognition in psychiatric circles.

Two medical portraits, briefly described in minor characters, are to be found in that treasury of pathology, *Lo prohibido*. The first is that of Raimundo, cousin of José María Bueno de Guzman, whose plight echoes the physical and moral decay of the protagonist. José María describes Raimundo, who was once brilliant and charming, as having decayed to the point of exhibiting, *odd enthusiasms and to be regrettably careless about his social and private behaviour*. Something has clearly gone wrong with him, since though once brilliantly talented he has lost all drive, has been unable to persevere with any career, and has aged prematurely, *I realized that there was already little oil left in that lamp that had burned early and been stirred up constantly*. Raimundo confesses to José María, *I have got the beginning of a serious illness. Do you know what it is? Softening of the spinal cord*. Raimundo declares that there is no need for him to consult a doctor as he has read all about its course, symptoms and treatment.

Raimundo describes difficulty in expressing himself, *Do you know [...] what is one of the principal symptoms of softening of the spinal cord? Aphasia, that is, loss of the [spoken] word*. The jargon that Raimundo musters betrays the nature of his condition. The word *softening*, [*reblandecimiento*], is significant because by the 1880s, it was apparent that the common spinal cord condition at that time, *tabes dorsalis*, was a delayed (or tertiary) form of syphilis. In the US, William Hammond (1828-1900) had strongly suggested the association in the French translation of his book in 1879 (1183), and by 1882 the leading French venereologist, Alfred Fournier (1832-1914), was quite convinced of the syphilitic cause of *tabes (l'ataxie, 375)* and mentions its association with aphasia (374). Galdós thus tells his more knowledgeable readers the cause of Raimundo's deterioration and difficulty with speech.

Galdosistas familiar with the investigations of Manuel Herrera Hernández will be aware that there is a suspicion that Galdós himself suffered from *tabes dorsalis* at the end of his life. It is possible, given the latent period that can be up to 30 years before tertiary disease develops, that Galdós may have had additional, personal reasons for the very detailed knowledge of syphilis that he reveals at the time that he wrote *Lo prohibido* and *Fortunata y Jacinta*.

Moral decay is also described in Serafín, the retired naval officer and Rafael's brother. Though less information is provided about him than about Raimundo, we learn that he had been a wild young man before going to sea. Though now outwardly of impeccable manners, in private he is a compulsive kleptomaniac and steals an extraordinary range of others' possessions, apparently without being able to control himself. Rafael is unable to account for his behaviour observing, *it's a mystery of nature, a cerebral aberration*. José María suffers

the consequences of this behaviour when he finds that book of his, a small bronze and other knick-knacks are disappearing into Serafín's pockets. He mourns to see such a mean habit develop in a formerly upright, military man and reflects, *I believe that he himself did not realize what he was doing, that his light-fingeredness was a neuro-pathological phenomenon, an irresponsible act independent of ideas of the moral.*

Galdós further suggests a medical background of Serafín's behaviour by depicting his other obsession, that of compulsive skirt-chasing,

He who in his mature years had been a high-flying don Juan, in old age chased pretty servants, or those who seemed pretty to him, for we must believe that aberrations of taste accompany the affections of senility. His strolls by morning and evening took the form of feverish, active pursuit that was almost always fruitless.

Galdós here vividly describes two forms of behaviour that were associated in his time with GPI, a *neuro-pathological phenomenon* if ever there was one. Giné y Partagas in 1883 describes a patient with the condition as being in, *a continuous erotic fever*, and, in reviewing the manifestations of the condition, states that patients can feel, *compulsive sexual excitement that leads them to perform obscenities, even in public*. Descriptions of *exitación genésica* and *kleptomanía* appear repeatedly in Jaime Vera's monograph on G.P.I. published four years before *Lo prohibido*. Vera describes some of the patients he saw, *Sexual excitement reaches such intensity and the ability to repeat coitus [becomes] so marked that there are patients of whom one can say that they do nothing other than exercise their sexual functions* (47). Vera, mentions patients with kleptomania, *wherever they find themselves, surreptitiously at times, at others indifferent to being observed, they take a wide collection of objects whether they are worth anything or not* (60). Henry Maudsley (1835-1918) draws a direct connection between kleptomania and G.P.I. in the 1870s, emphasizing the absence of sense of responsibility of the subject and its contrast with previously normal behaviour (247). It is likely that Galdós was also aware of the association of eroticism and kleptomania when he crafted his portrait of Serafín.

Galdós's interest in medicine can extend to the grotesque, as in his depiction of the disastrously deformed brother of Leré, Juan *el monstruo*, in *Ángel Guerra* and the violent mental retardation of the second Valentín, also described as a *monstruo*, in the latter *Torquemada* novels. Often, his interest will take a more morbid turn as he describes dying characters with an almost clinical fidelity. As Montesinos observes, *Galdós [...] does not allow anyone to die without listening [to their chest] and taking their pulse, nor does he fail to detail their symptoms, or spare medical jargon* (II 88). The painful death with vomiting of blood of Pepe Carrillo in *Lo prohibido*, the fatal gastric outlet obstruction of Torquemada, and the death of Fortunata from post-puerperal haemorrhage are examples. Ángel Guerra's internal haemorrhage from a stab wound, and doña Sales' terminal pulmonary oedema as a result of post-rheumatic aortic valve disease are others.

I should like to discuss the death of Mauricia la Dura, however, for the detail that Galdós assembles to conjure her medically-authentic demise. We are well-prepared to anticipate her end after his depiction of her acute craving for alcohol in the convent of *Las Micaelas* and the reports of her repeated and violent public drunkenness. Failing physically and mentally, she is taken to the home of her sister, Severiana, to die.

Galdós provides us with much clinical information. He tells us that Mauricia is running a fever, has lost her appetite, and has developed tremor of limbs and face characteristic of *delirium tremens*, the condition Thomas Sutton described in 1813. Mauricia suffers an epileptic convulsion also recorded in contemporary texts. Galdós is aware that the precipitating event in *delirium tremens* is the sudden withdrawal of alcohol, to which the sufferer's body has become habituated, the hallmark of addiction. He portrays the counter-

intuitive treatment of the addicted patient with small doses of alcohol, which Mauricia's anonymous physician prescribes. This scandalizes Severiana and doña Lupe, to whom it looks like fanning the flames of the disease. Doña Lupe expresses surprise that the patient should be treated with regular quantities of sherry containing the alcohol responsible for Mauricia's parlous state, *but are you really giving her ... that perdition?* she asks, to which Severiana answers, *the doctor has ordered it. He says that it is medicine. It seems to me to be the reverse, I can tell you.*

Other features of Mauricia can also be found in contemporary medical texts. We are told from the beginning about her hoarse (*ronca*) voice, associated at the time with drinking. In the final phase of her disease, Galdós not only makes her suffer from breathlessness but also describes a cavernous voice that, *seemed to come from the depth of a deep pitcher and sounded very distant.* Both are described in Galdós's copy of Jaccoud (*III* 788).

More detail is to come, however, for when the doctor examines Mauricia he finds that her abdomen and legs are swollen. Galdós explains Mauricia's swollen abdomen indirectly by having Guillermina describe a neighbour with a similar case of hydropsy (*ascites*). Accumulation of fluid in lower limbs and the abdomen are described in Jaccoud (*III* 20-21) and were associated with scarring of the liver, *cirrhosis* (*III* 62), which was recognized as a feature of chronic alcoholism (*III* 57). Loss of weight together with swelling of the lower limbs was observed by Huss (Renaudin 69). Descriptions of terminal liver failure in end-stage chronic alcoholism were thus circulating at the time that Galdós wrote. What is striking is that he incorporated so many of them, entirely appropriately, into his moving depiction of Mauricia's end.

Some of Galdós's most wrenching death scenes are those involving children. They are individualised and are detailed enough to suggest that he modelled them on conditions that he had not only studied but, probably, also witnessed.

He depicts epidemic typhus in his description of the death of Paco Ramos, *Posturitas*, as witnessed by his schoolfellow, Luís Cadalso, in *Miau*.

Posturitas had been terribly delirious all night and for part of the morning. At that moment he was quieter still without a return of his high temperature [...] he glanced at his friends with an astonished and glassy gaze. Although his eyes were inflamed they had a deathly look, his lips were so purple that they seemed black and there were wine-red blotches in his cheeks [...] the fixed and lacklustre gaze of his schoolfellow made him tremble. No doubt Paco Ramos was unable to recognize the three except for Luisito, because he only said Miau, Miau, after which his head collapsed on the pillow.

The next time that Luís sees him is when the dead boy has been laid out, *his face very yellow with purple blotches, the mouth half open and almost black*, which poor Luís finds terrifying.

Three forms of typhus had to be distinguished clinically, as there were no confirmatory laboratory studies. Abdominal typhus was dominated by gastrointestinal symptoms and resembled typhoid fever, also endemic in Madrid, while the central nervous form attacked the brain producing coma. In contrast, *Posturitas'* disease, with its intermittent fever and delirium, its blotchy rash and the inflammation of the eyes, is typical of the epidemic type, which was known to be associated with crowded and unhygienic living conditions. The disease killed thousands in Madrid every year and treatment could only be supportive since there was no cure, and the causative organism and its transmission by lice were unknown.

An even more pathetic death is that of Ción, Ángel's adored and beautiful six-year old daughter in *Ángel Guerra*. She develops a high fever for which no obvious cause is identified. Her imagination is heightened suggestive of early delirium. She starts to roll her eyes and to adopt a provocative expression inappropriate for a child that Galdós refers to as an, *unusual look that is technically known as cynical*. Despite cold compresses applied to head and body, the fever advances and Ción adopts extreme, asymmetrical facial expressions culminating in a major convulsion, and she dies with a *sardonic smile* on her face.

The extreme vividness of this episode suggests strongly that Galdós had seen such a scene in real life and that he had a specific disease in mind. For in addition to describing an uncontrollably high temperature, he adds that Ción's facial muscle spasm produces a *cynical* expression and describes her rolling herself into a ball, while remaining mentally clear until her final convulsion. The last feature given her is a sardonic smile. In Galdós's time, this type of smile was associated with two conditions, one was strychnine poisoning and the other was tetanus. Galdós's edition of Jaccoud contains a description of tetanus that includes distorting facial spasms and unremittingly high temperature in association with mental clarity not seen in meningitis, the condition with which it tended to be confused. In addition there may be spasm of the trunk of the body in flexion, in which the body curls up into a ball, though this is less common than the classical, backward hyperextension, *the body [...] remains curved either backwards (opisthotonos), which is the most common, or curled forwards (emprosthotonos) (I 777)*. It is clear that Galdós adopted features of tetanus in his description of Ción's death.

A third quite distinct, but equally tragic, death is that of the first Valentín in *Torquemada en la hoguera*. Galdós describes Valentín, the pride of Torquemada's life, coming home from school with high fever and drowsiness that does not resemble normal sleep. Torquemada's medical son-in-law, Quevedo, recognizes the seriousness of Valentín's condition with his unusually astonished expression and sparkling eyes such as were described in the first stages of acute meningitis. In this phase, there is typically cerebral excitation associated with severe and unrelenting headache. As Valentín lapses into delirium, his speech becomes halting and ideas incoherent. Galdós describes the development of a fearful look in his eyes and muscle spasms as if he were jumping in his bed, the latter listed in a contemporary account of the disease. Even more disturbing is his shrill, meningitic cry, *like the squawk of a peacock*, that rings through the house. Valentín's respiration becomes increasingly difficult as his delirium deepens and his high fever persists in spite of all treatment, and as he dies he cries that angels are calling for him. While I have no evidence that Galdós witnessed death from acute meningitis, the vividness and detail of this description suggest that he had.

Medical portraits in principal characters

A third category of medical depiction might include sustained conditions in Galdós's major characters. These would include pulmonary tuberculosis in Alejandro Miquis in *El doctor Centeno* and the conjunctivitis of Francisco Bringas. The three examples that I shall refer to here, however, are those of Pablo Penáguilas in *Marianela*, José María Bueno de Guzman in *Lo prohibido* and Maximiliano Rubín in *Fortunata y Jacinta*.

In *Marianela*, we are told that Pablo Penáguilas was born with congenital cataracts and that he is blind with no perception of light. The ophthalmic surgeon Teodoro Golfín arrives with the intention of restoring Pablo's sight. Golfín describes the results of his examination of Pablo and Galdós is clearly at pains to demonstrate the surgeon's high technical competence as he has him pronounce a string of ophthalmological terms. After mentioning a simple congenital cataract, he refers to *a fissure in the iris, the choroid and the retina are healthy*, and worries that he might discover *complete amaurosis* (blindness). He considers that the

vitreous fluid is likely to be normal and that he will be able to treat any *glaucoma* (raised pressure in the anterior chamber of the eye). He notes that a fissure of the iris may allow some light to enter the eye, but he observes that Pablo can detect no light at all. He then employs the phrase, cortical layers (*capas corticales*), which I have already discussed. Such a litany of medical terms prompts Casaldüero to observe, *In chapter 5, the novelist employs the vocabulary of mineralogy and geology. Now he does it with that of ophthalmology. [This is] a characteristic feature of his style, very unusual not to say unique in the nineteenth century* (footnote no. 7).

The genre of *Marianela* as a work of fiction has been debated. Is it a romance, is it Naturalistic, is it laden with symbolism, as Casaldüero suggests (*Vida* 204-21), or is this field of symbolism primarily, in Montesinos' words, one of "slippery ground" (*I* 238)? I do not propose to enter into such a thorny debate, beyond observing that there is much in the sentimental story that cannot be taken as literally as one might be tempted to in Galdós's later, more Naturalistic novels.

Examples are Golfin's triumphant story of self-improvement, which has been described as a fairy story impossible in the Spain of his time, while Marianela's death seems to me to owe much to the tradition of non-specific decline beloved of Romantic writers. This improbability extends to medical aspects of Pablo Penáguilas' blindness, for it seems to me likely that Galdós knew enough medicine to realize that Pablo's immediate recovery of full visual function after surgery is impossible.

It had been long appreciated in nineteenth century ophthalmology that for successful treatment of congenital cataracts, their displacement (or *couching* from the axis of view) had to be performed as soon as possible after birth if satisfactory vision was to be established. It was well known empirically that cataract removal in later childhood or adult life was associated with poor visual function. We have since learned that the infant brain passes through a critical period when normally stimulated visual pathways are essential if the brain's visual cortex is to develop normally (Wiesel). After this critical period, the brain has difficulty in interpreting the visual information sent to it.

This exact problem was posed by the Irish philosopher William Molyneux (1656-98) and formed the basis of his letter to John Locke, with a discussion of the matter appearing in Locke's *An Essay Concerning Human Understanding* in 1689. Molyneux's question concerned the predicament of a man born blind who had learned to distinguish shapes such as a cube and a sphere by touch. What would happen if the man was given his sight? Would he be able to recognize the cube and the sphere by sight, without touching them? Locke surmised the answer to be negative, as the man would have had no prior visual experience upon which to base such a judgement.

An opportunity to answer this question occurred 40 years later in 1728 when the English surgeon, William Cheselden, reported *couching* of congenital cataracts in a 14-year-old boy. With sight restored after 14 years of blindness, the lad had great difficulty in using his new visual ability to recognize the size and shape of objects that he knew well by touch. He struggled to distinguish a dog from a cat by sight, for instance, although he recognized them instantly when he felt their coats. Cheselden records that, after picking up a cat, *he was observ'd to look at her steadfastly, and then setting her down, said, 'So Puss! I shall know you another Time'* (448).

From this and from subsequent texts, it is abundantly clear that Pablo Penáguilas' almost immediate acquisition of sight with a developed aesthetic sense of female beauty cannot be accepted literally. Despite the litany of ophthalmological terms, which are associated with other improbabilities, the magical restoration of Penáguilas' sight must be regarded as a

fable. The mixture of Naturalism, symbolism, fantasy and romance that critics have discussed in the novel appears to be paralleled by the mixture of literal and fabulous in the matter of medical representation.

A very different medical portrait occurs in *Lo prohibido* where Galdós portrays the rational but neurotic character of its protagonist auto-biographer. Set in Madrid in 1884, José María Bueno de Guzman confesses to subjective troubles that mark him as typical of his pathological family. He suffers from hypochondria, loss of appetite and insomnia, together with inexplicable attacks of anguished terror. He also complains of depression during which he may experience irrational fear, such as might be provoked by being in the path of an oncoming train. Quoting the authority of Augusto Miquis, his uncle Rafael labels José María as suffering from, *the disease of the century that, by compelling mental activity, was creating a predisposition toward nervous disease in the entire human race.*

José María's symptoms suggest that Galdós's depiction derives from the recently described entity of *neurasthenia*, which enjoyed a vogue for decades, the medical journalist, Fernando Calatraveño, employing it to castigate the political classes in 1900. It was defined in the United States in 1869 independently by George Beard (1839-83) and Edwin Van Deusen (1828-1909), and the concept became influential in Europe after its acceptance by Wilhelm Erb (1840-1921) in Germany, and its elaboration in the later 1880s by Jean-Martin Charcot (1825-1893) in France. Beard saw the condition in well-to-do urban patients on the East Coast of the United States and claimed that it was particularly common in the over-achieving, professional, upper-middle classes.

Beard identifies the nexus of civilization and progress as responsible for a range of subjective complaints such as dyspepsia, headache, insomnia, anaesthesia, neuralgia, hypochondria, loss of appetite, terrors, and roaring in the ears. He finds it, *most frequently met with in civilized, intellectual communities. They are part of the compensation for our progress and refinement* (217). He claims furthermore that, *Neurasthenia may result from any causes that exhaust the nervous system. Hereditary descent terribly predisposes to neurasthenia.* As additional causes, he lists: *pressures of bereavement, business and family cares, [...] sexual excesses, [...] and sudden retirement from business* (218). In summary, neurasthenia is later described as, *a disorder of modernity, caused by the fast pace of urban life* (Gijswijt-Hofstra 1). The very close correspondence with the circumstances and symptoms that Galdós gives José María indicates to me that he certainly knew of Beard's work.

The third sustained medical depiction that I choose, arguably the most detailed in all of Galdós's *oeuvre*, is that of Maximiliano Rubín in *Fortunata y Jacinta*.

His profile begins with his mother, Maximiliana Llorente, who was beautiful, lived beyond her husband's means, led a scandalous life and had three sons who looked so completely different from each other to suggest that they had different fathers. It is clear that Galdós means us to understand that she was sexually promiscuous. The brothers all have severe headaches.

Maxi was weakly as a child with a lymphatic constitution, and was born at seven months' gestation, when he needed to be fed with a bottle and by a goat. As a young adult, he has difficulty with learning and is a poor student. He has a small, feeble body and is balding prematurely. The bridge of his nose has collapsed, his teeth are strikingly irregular, he suffers from bone pain and he has severe coryza.

Maxi medicates himself with every known form of potassium iodide and appears to suffer delayed sexual development for, at the age of 25, has still no moustache indicating a lack of facial hair. He is mentally unstable and becomes obsessed with the idea that he has an aneurysm (abnormal swelling) of the aorta and dreams that it ruptures. He contemplates

murder-suicide, and is convinced that his family wants to poison him. He later experiences a mania for logical analysis, has delusions of religious grandeur, and experiences hallucinations of a nocturnal intruder. He tries to murder the cook while, in a subsequent lucid interval, he is able to summarize objectively the experience of his psychosis. His oldest brother, Juan, and his pharmaceutical mentor, Segismundo Ballester, surmise that Maxi may suffer from diffuse periencephalitis or meningoencephalitis, with associated softening of the brain.

Galdós here assembles such a specific set of features that I conclude that he had a particular disease in mind when he depicted Maxi. His description relates closely to that first made by the English physician, Jonathan Hutchinson (1828-1913), who in 1858 described a previously unrecognized form of congenital syphilis, one that presents in adult life.

Syphilitic infection of mother and child with resulting repeated miscarriage, or prematurity and death of infected infants, was recognized after the disease erupted in Naples in the 1490s and underwent epidemic spread throughout the Western world. Children often died despite treatment with medications, including those containing mercury. By the nineteenth century, crowding and poverty in rapidly growing cities were associated with a terrible new wave of the disease.

In 1858, Hutchinson recognized the signs and symptoms of advanced (or *tertiary*) syphilis in adolescents and young adults, which provoked the question whether the infection had been acquired during infancy, from an infected wet-nurse for instance, or from before birth. Hutchinson answered this with the crucial observation that the patients' permanent teeth were consistently malformed, indicating a disturbance of tooth-formation during intrauterine life. The form of tertiary syphilis that Hutchinson recognized was therefore congenital.

Hutchinson describes short stature, skin that may appear thin, and hair that is thin and dry. He places particular emphasis upon the irregularly placed and malformed permanent teeth, which included a specific abnormality that has been associated with his name in medicine ever since. He lists disease of the bones and joints, while a sunken and flattened nose he describes as, *a very marked condition in most cases and constitutes a very valuable sign* but qualifies this by asserting the prime importance of the *tout ensemble*, that, *it is not by any one symptom that the diagnosis of hereditary syphilis can ever be supported but by the careful estimation of the entire group* (265).

His observations were confirmed by the equally distinguished French venereologist, Alfred Fournier (1832-1914), who published his findings in 1886. In addition, Fournier's experience led him to be very suspicious of young men with severe, chronic headaches, especially if there was a suspicious family history. As a result, he recommended that such patients be considered to have chronic, syphilitic meningitis and be given anti-syphilitic medication (*héréditaire*, 488).

Maxi's obsession with potassium iodide, *in every possible form* is a very striking feature of Galdós's description since the only indication for it listed in the *Farmacopea Oficial Española* of 1884 is, *for particular use in the treatment of the manifestations of tertiary syphilis*. Potassium iodide, in the treatment of those syphilitic patients in whom mercurials were less effective, had been popularized since 1835 by the Dublin dermatologist-venereologist, William Wallace. Galdós's identification of this medication strongly suggests that he is not only telling his more knowledgeable readers the cause of Maxi's problems, but also that Maxi is aware of his condition and is doing all he can to treat it.

Consistent with that awareness, Galdós makes Maxi hypochondriacally obsessed with a known complication of his disease, aneurysm of the aorta and its not uncommon

complication, rupture, which was always fatal. The association of aneurysmal dilatation of the thoracic aorta with tertiary syphilis was first fully documented by the British Army pathologist Francis Welch in 1875 on the basis of autopsies performed on soldiers who had died in the prime of life. Writing only eleven years after that paper, Galdós indicates that Maxi knows of this complication of his disease and its potential for a fatal outcome. From the plot of the novel, we may assume that Maxi has read about aortic aneurysm in one of the great medical books (*libros de Medicina*) in the Ballester pharmacy that Fortunata criticises him for reading.

Maxi's hypochondriacal obsession and his intermittently tenuous grasp on reality make one wonder what relation there might be between his delayed congenital syphilis and his progressive insanity. In Galdós's time, a link between syphilis and GPI was beginning to be suspected, although GPI had been recognized in asylums throughout the Western world after its description by Bayle in 1822. Fournier suggested a connection between the two conditions in *La syphilis du cerveau* in 1879, while in Spain, the association is suggested in Jaime Vera's monograph of 1880.

GPI occurs as a manifestation of advanced syphilis, sometimes rapidly but often many years after initial infection. It can also affect those suffering from the delayed, congenital form of the disease. A full description of the psychiatric features of GPI is given by the leading Spanish alienist of Galdós's day, Juan Giné y Partagas (1836-1903): paranoia, hallucinations, megalomania, religious delusions, mania, depression, violence and a remittent course with lucid intervals that may temporarily give rise to hope of a cure. Vera's monograph adds obsessively logical reasoning, diffuse interstitial periencephalitis, diffuse interstitial encephalitis and softening of the brain. The correspondence with Maxi's psychosis and the opinions of those about him could scarcely be closer.

I believe that the evidence for Galdós having modelled his portrayal of Maxi on the features of delayed congenital syphilis and GPI is overwhelming. Maxi lives in our imagination partly because of the authenticity of Galdós's depiction of one of the most feared and widespread of nineteenth-century diseases. As such, Maxi represents one of the most powerful expressions of Galdós's dedication to the Naturalist poetic in his novels.

Conclusions

I hope that I have left you with an admiration as great as mine for Galdós's knowledge of medicine. While he told Tolosa how much he admired doctors' clinical skills for their potential to get to the heart of the human condition, his novels reveal the success with which he was able to master some of their knowledge. His borrowings are not always accurately applied, in a strictly medical sense, but the range of his medical acumen is nevertheless astonishing. I hope that you will agree that it represents a field worthy of further study.

References

For brevity, I omit some the standard Galdós texts in favour of medical references that may be less familiar.

Acea Nebriil, B. "El cólico miserere (*Miserere mei*). Aportaciones sobre su etimología y características clínicas e hipótesis sobre su aparición en la literatura médica de los siglos XVII-XVIII." *Revista española de enfermedades digestivas* 93:3 (2001): 176-80.

- Arenal, Concepción. "Cartas a un obrero No. 26. De la familia-El género humano no puede existir sin ella." *Obras completas* Vol. 7. Madrid: Lib. Victoriano Suárez, 1895. 331–42.
- Auvard, A. "De la couveuse pour enfants." *L'Union Médicale* 15 Dec. 1883: 1025–29.
- Beard, George M. "Neurasthenia, or nervous exhaustion." *The Boston Medical and Surgical Journal* 3.13 (1869): 217–221.
- Calatraveño, Fernando. "La neurastenia en los hombres de Estado." *La Revista Contemporánea* 119 (1900): 572–78.
- Casalduero, Joaquín. footnote no. 7, page 142. Benito Pérez Galdós. *Marianela*. Ed. Joaquín Casalduero. Madrid: Cátedra, 1983.
- . *Vida y obra de Galdós (1843–1920)*. Madrid: Editorial Gredos, S.A., 1974.
- Cheselden, William. "An Account of some observations made by a young Gentleman, who was born blind, or lost his Sight so early that he had no Remembrance of ever having seen, and was couch'd between 13 and 14 Years of Age." *Philosophical Transactions* 35.402 (1728): 447–50.
- Donegan, William L. "History of Breast Cancer." Ed. David J. Winchester, David P. Winchester, Clifford Hudis and Larry Norton. *Breast Cancer*. 2nd. ed. Hamilton, Ontario: B. C. Decker Inc., 2006.
- Farmacopea Oficial Española*. 6th ed., Madrid: Tip. Gregorio Estrada, 1884.
- Fishman, Ronald S. "Brain Wars: Passion and conflict in the localization of vision in the brain." *Documenta Ophthalmologica* 89 (1995): 173–84.
- Foucault, Michel. "Prologue." in *The Birth of the Clinic. An Archeology of Medical Perception*. Trans. A. M. Sheridan Smith. New York : Vintage Books, 1994.
- Fournier, Alfred J. *De l'ataxie locomotrice d'origine syphilitique*. Paris: G. Masson, 1882.
- . *La syphilis du cerveau. Leçons cliniques recueillies par E. Brissard*. Paris: G. Masson, 1879.
- . *La syphilis héréditaire tardive*. Paris: G. Masson, 1886.
- Gijswijt-Hofstra, Marijke. "Introduction: Cultures of Neurasthenia from Beard to the First World War." Ed. Marijke Gijswijt-Hofstra and Roy Porter. *Cultures of Neurasthenia. From Beard to the First World War*. Amsterdam: Rodopi, 2001.
- Giné y Partagas, Juan. *Tratado teórico-práctico de freno-patología ò estudio de las enfermedades mentales*. Madrid: Moya y Plaza, 1876.
- Hammond, William. *Traité des maladies du système nerveux*. Trans. F. Labadie-Lagrave, Paris: J.-B. Ballière, 1879.
- Herrera Hernández, Manuel. *Consideraciones sobre la ceguera de Benito Pérez Galdós*. Gran Canaria: Real Sociedad Económica de Amigos del País de Gran Canaria, 2006.

- Hutchinson, Jonathan. "On the Means of Recognizing the Subjects of Inherited Syphilis in Adult Life." *Medical Times and Gazette* 11 Sep. 1858: 264-65.
- Jaccoud, Sigismond. *Tratado de patología interna 3 vols.* 4^a ed. trans. Joaquín Gassó and Pablo Leon y Luque, Ed. Francisco Santana y Villanueva, Madrid: Bailly-Balliere, 1885.
- Lambert, A.F. "Galdós and Concha-Ruth Morell." *Anales galdosianos* 8 (1973): 33-46
- Lasègue, Charles and J. Falret. "La folie à deux." *Archives Générales de Médecine* 2 (VI^e série, tome 30) Septembre (1877): 257-97.
- Maudsley, Henry. "Materialism and its Lessons." *The Fortnightly Review* 26 (1879): 244-60.
- Monlau, Pedro Felipe. *Higiene del matrimonio.* 5th ed., Madrid: Imp. Esteoriotip. Galvano. Aribau y C^a, 1881.
- Montesinos, José F. *Galdós.* 3 vols. Madrid: Editorial Castalia, 1968.
- Oria Martínez-Conde, Manuel. *Homenaje al doctor Madrazo.* Santander: Tantín, 1985.
- Parrot, Joseph M. J. "Nourricerie de l'hospice des enfants assistées." *Bulletin de l'Académie de Médecine* 11 (1882): 839-53.
- Pérez Galdós, Benito. *Fortunata and Jacinta: Two Stories of Married Women.* Trans. Agnes M. Gullón, London: Penguin Classics, 1988.
- Renaudin, M. le Dr. "De l'alcoolisme chronique par M. le Dr Magnus Huss." *Annales Médico-Psychologiques* 5 (1853): 60-88.
- Ribbans, Geoffrey. *Pérez Galdós: Fortunata y Jacinta.* London: Grant and Cutler Ltd., 1977.
- Rosenau, Milton J. *The Milk Question.* Boston: Houghton Mifflin Company, 1912.
- Routh, C.H.F. *Infant Feeding and its Influence on Life.* 3rd ed. London: J. and A. Churchill, 1876.
- Sacks, Oliver. "Face-blind." *The New Yorker.* 30 Aug. 2010. 36-43.
- Schmidt, Ruth. *Cartas entre dos amigos del teatro.* Las Palmas: Cabildo Insular de Gran Canaria, 1969.
- Serrano Fatigati, Enrique. *Alimentos adulterados y defunciones.* Madrid: Imp. El Día Lucas Polo, 1883.
- Tolosa Latour, Manuel. *El Niño.* Madrid: La Gaceta Universal, 1880.
- Van Deusen, E.H. *Observations on a Form of Nervous Prostration (Neurasthenia) Culminating in Insanity.* Lansing: W.S. George & Co., 1869.
- Vera, Jaime. *Estudio clínico de la parálisis general de los enajenados.* prólogo José María Esquerdo. Madrid: Moya y Plaza, 1880.

Viñeta-Bellaserra, José. *Profilaxia de la sífilis en el niño y en la nodriza por medio de la lactancia animal, particularmente en las maternidades y casas de expósitos*. Barcelona: Tip. Casa Provincial de Caridad, 1889.

Wallace, William. "Treatment of the venereal disease by the hydriodate of potash, or iodide of potassium." *Lancet* 36. 2 (1835): 5-11.

Welch, Francis J. "Aortic Aneurysm in the Army, and the conditions associated with it." *The Lancet* 27 Nov. 1875: 769-71.

Wiesel, Torsten N. "Postnatal development of the visual cortex and the influence of environment." *Nature* 299.14 (1982): 583-91.

Wigan, A. L. *The Duality of Mind*. London: Longman, Brown, Green, and Longmans, 1844.